The SEWING MACHINE

Its History and Practical Application to Tailoring

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THE SEWING MACHINE

An HISTORICAL and PRACTICAL
EXPOSITION of the SEWING MACHINE
from its inception to the present time.

Containing
explanations showing the Modern Methods of Garment Making applied to all kinds of Tailor-Made Garments.

BY
LEWIS LYONS, T. W. ALLEN
and W. D. F. VINCENT.

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PREFACE

From time to time we have published short treatises dealing with the Sewing Machine as applied to Bespoke Tailoring, but never before have we attempted anything so exhaustive and practical as this volume.

The first part is devoted to the wonderful story of the evolution of the sewing machine from its first crude inception up to the latest development of the present day. This part involved a considerable amount of research and in this matter Messrs. Allen and Vincent were greatly assisted by the Authorities of the South Kensington Museum, who also supplied the photographs from which many of the blocks were made. The makers of modern sewing machines were consulted, and these also contributed much valuable information, so that the history here given may be looked upon as authoritative as any independent and unbiassed history can be.

The second part of the work, which is mainly practical, was originally written by Mr. Lewis Lyons, who was an expert machinist, in harmony with a scheme planned by Mr. W. D. F. Vincent, in consultation with him. This has since been revised and re-written by the latter and Mr. W. T. Allen.

Part three, as will be observed, consists of miscellaneous contributions, dealing principally with the most recent methods of garment-making by machine, as adopted in this country and America.

Thus it will be gathered this book is the work of three authors of world-wide repute, each of whom acknowledge the assistance of many who have given much study to this subject. We, therefore, feel assured it will find a place in the library of every tailor who desires to know the possibilities of modern machinery in connection with his business.

We are issuing it at an extremely moderate price and at the same time producing it in the best style, printing it on art paper, and illustrating it with the best blocks, and consequently expect a large sale for it.

The John Williamson Co. Ltd.

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CONTENTS

	PAGE
Introduction	1
Illustration of First Sewing Machine, 1790	1
Illustration of Thimmonier's Sewing Machine, 1830	2
Historical	3
Howe's Sewing Machine	3
Hand *v.* Machine	3
Illustration of Howe's Original Sewing Machine, 1845	4
Illustration of Judkins' Sewing Machine	5
Other Inventors	5
Illustration of Original Singer Sewing Machine	6
Illustration of Thomas's Sewing Machine, 1853	7
Sewing Machine Stitches	8
The Chain Stitch	8
The Lock-Stitch	8
The Tambour Stitch	8
Care of the Machine	8
Jacket making on Singer Sewing Machines	9
Tailoring Sewing Machines	10
Changes in Garment Making	10
Hand *v.* Machine Sewing	10
Jacket Making	11
Modern Sewing Machines	12
Making a Suit by Machine	12
The Jacket	12
Outsides	12
Insides	13
Under Basting	14
Bagging	14
Out Basting	14
Edge Stitching	14
Sleeve Insertion	14
Buttonholes	14
Sewing on Buttons	14
Bar Tacking, etc.	14
Vest Making	16
Final Operations	19
Trouser Making	19
Fly Button Holes	19
Bar Tacking	19
Canvassing, Seaming, etc.	20
Button Sewing	20
Paring and Binding	20
Felling Trouser Bottoms	20
Ticket Sewing	20
Willcox and Gibbs' Sewing Machines	23
"Arbatter" Lock Stitch Sewing Machines	25
Buttonhole Machines	25
Reece Buttonhole Machines	25
Reece Rapid Buttonhole Machine	26
Reece Straight-hole Buttonhole Machine	26
Reece Hand Buttonhole Machine	26
Sewing Machines used in America	26
Lewis Blind-Stitch Machines	26
American Blind Stitch Machine	27
Royal Army Clothing Factory	28
The Sewing Machines	28
Cutting Chevrons	29
Five Thousand Sewing Machines	29

PART II.

	PAGE
Practical Garment Making by the Machine	31
The Sewing Machine Dissected	32
Regulating the Tension	32
Bobbin, Case and Shuttle	33
Regulating the Stitch	34
Type of Foot	34
Cause of Seam Stretching	34
The Needles	35
How to Work a Machine	35
Garment making by Machine	36
Sleeve Making	36
Sewing the Forearm	36
Stitching the Cuff	37
Sewing the Sleeve Lining	38
Sewing Raised Seams	38
Stitching the Cuff	38
Turned in Seams	39
Piping round Cuff	40
Button Cuffs	40
Bound and Corded Cuffs	41
Button-cuff Corded Sleeve	42
Braiding	42
Flat-Braided Button Cuffs	43
Military Braided Cuffs	43
Lining Making	44
Fitting-up	44
Piped Facings	46
Another Method	46
Shoulder Padding Treatment	46
Vee Treatment	46
Inserting Inside Breast Pockets	47
The Plain Pocket	48
Dual-Piped Breast Pockets	48
Raw Edge Inside Breast Pocket	49
American Inside Breast Pocket	49
Hare Pockets	51
Closing the Lining	51
Sidebody Quilting	52
Closing the Sideseam	53
Sewing on "Wheel Piece"	54
The Making of Pockets	55
Making the Flaps	56
Putting in Pockets	56
Making an Outside Breast Pocket	57
Pocket-making by Machine	59
Outside Breast Welt Pocket	59
Hip Patch Pocket	60
Making a Bellows Pocket	60
Inserting Watch Pocket inside the Patch	61
Making a Pointed Flap	61
Making a Norfolk Side Pocket	62
Half-Moon Pocket	62
Vertical Half-Moon Pocket	63
Making a Raglan Welt Pocket	63
Half-Moon Flap Pocket	64
Piped-bound Pockets	64
Piped-bound Out-Breast Pockets	65

	PAGE
Stitched-on Braid	67
Bound Welt Pocket	68
Corded Edge Welt Pocket	69
Corded Pockets	71
Flat-braided Pockets	72
Flat-braided Welt	73
The Striped Welt	74
Closing without Basting	76
Sewing the Shoulders	77
Sewing the Collar	78
Backing the Back Vent	78
Straight Slit or Vent	80
Body Coat Backs	81
Braided Backs	82
Making a Corded Edge Back	83
Making a Flat-braided Back	84
Body Coat Waist Seams	86
Making Morning Coats	88
Skirt Flap Pockets	89
Skirt Ticket Pockets	90
Making Frock and Coachman's Coats	90
Crescent-shaped Ticket Pocket	91
Coat-Bagging	92
Putting on Braid	92
Sewing in Sleeves	92
"Odds and Ends"	93
Velvet and Velveteen	93
The Sewing Machine	94

PART III.

	PAGE
How to Bag a Jacket	95
The Facings and Lining	95
The Flaps and Pockets	95
The Canvas	96
Basting on the Facings	96
The Sleeves	97
Coat Making by Machine	97
The Sleeves	98
The Routine of a Sub-division Workshop	98
A Flap Pocket	99
The Possible Routine	99
The Inside Collar	99
The Facings and Linings	100
The Outside	100
The Putting in of the Sleeves	100
Several Jobs	100
Divisional Labour	101
An American View	101
Team System	101
A Modernised System of Working	102
Outworking	102
Modern Methods of Tailoring	104
A Scientific Method of Tailoring	104
A Leading London Bespoke Business	106
Illustration of Coat Room	107
Illustration of Finishing Room	108
Illustration of Cooking Kitchen	109
Illustration of Dining Room	109
Finale	109

THE SEWING MACHINE.

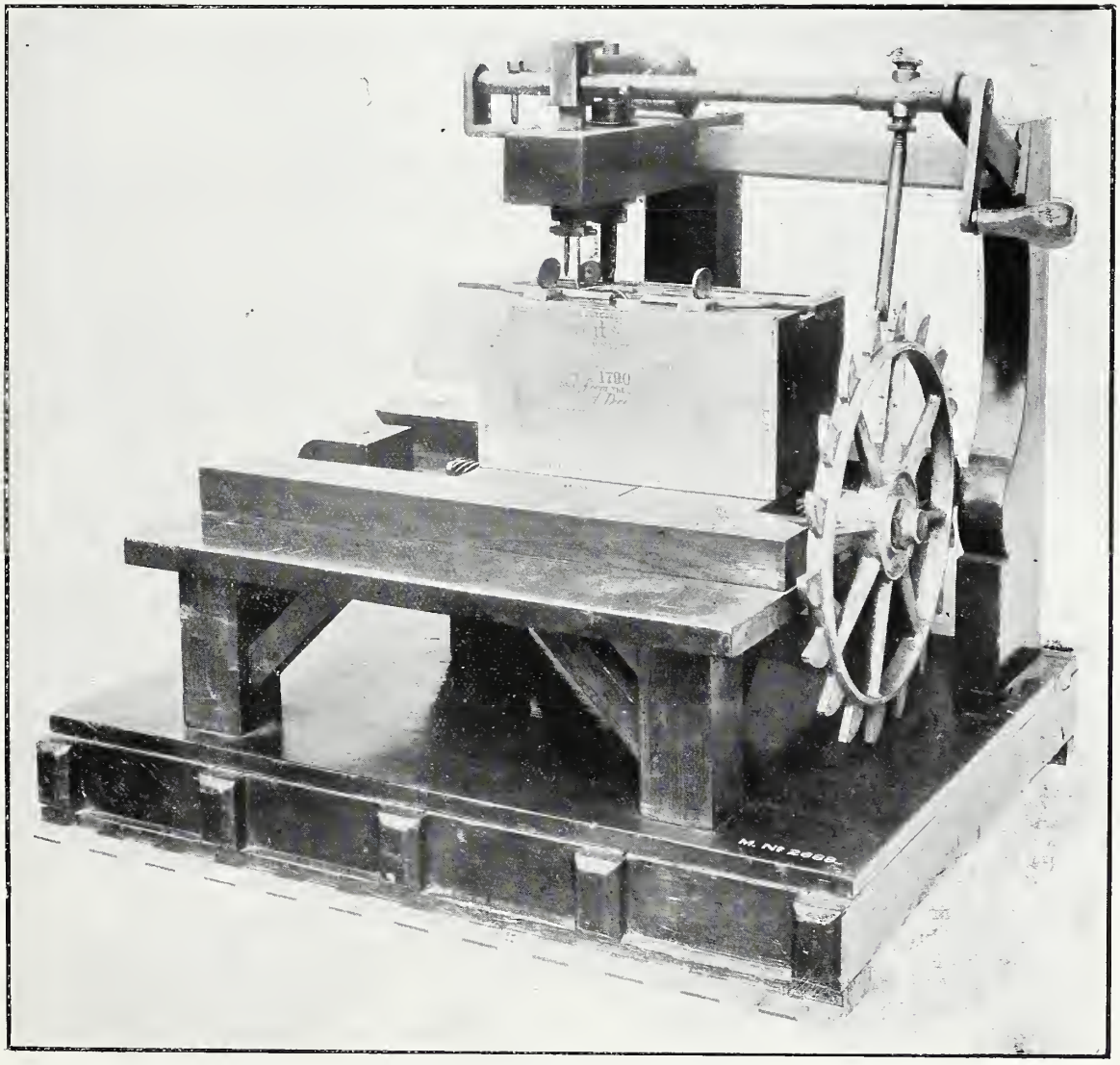
PART I.

INTRODUCTION.

Whatever may be said, and however it may be deplored in some quarters, there can be no blinking the fact that the machine is gradually taking the place of manual labour. In many industries it has almost entirely superseded hand-work, and the craftsman is known no more therein. In the trade of tailoring it has not yet come to that point, and we hardly think it ever will; but undoubtedly the future is with the machine.

This evolution of tailoring from craftsmanship to machinery has been steadily progressing ever since the introduction of the sewing machine; but of late years more rapid strides than ever have been made, and the late war and its demands upon the depleted labour market helped matters forward materially in the direction indicated.

Every unprejudiced observer who has investigated the capabilities of machinery in the making of garments, must have been struck with the really marvellous work



THE FIRST SEWING MACHINE.
INVENTED BY THOMAS SAINT, LONDON, 1790.

turned out by some of the more recent inventions. Apart altogether from the question of production and the quantity and rapidity of same as compared with hand-work, many of the processes performed by machinery are equal, if not superior in every respect to any operation performed by hand.

The introduction of mechanical power into the making of garments marked the first great stride in the evolution of the tailoring trade—it marked an epoch in the history of the craft. It was the beginning of a rapid development that is still in progress, and which will yet work a complete revolution in the methods of clothing manufacture.

When the full story of the evolution of the clothing industry is written it will be found the fount and impetus of the upheaval originated in the introduction of the sewing machine. This was the forerunner of all the labour-saving machinery and devices and appliances that have followed in its wake, and without which such inventions would hardly have been possible, or even necessary. Moreover, we are only at the beginning of a long series of mechanical improvements, and before the present era of advancement in mechanical science has ended, greater progress still will undoubtedly be made in the direction indicated.

It may be argued that the introduction of machinery into any industry does not constitute real progress or advancement, but only renders the work more mechanical and monotonous, and ends by making the worker himself a mere automaton.

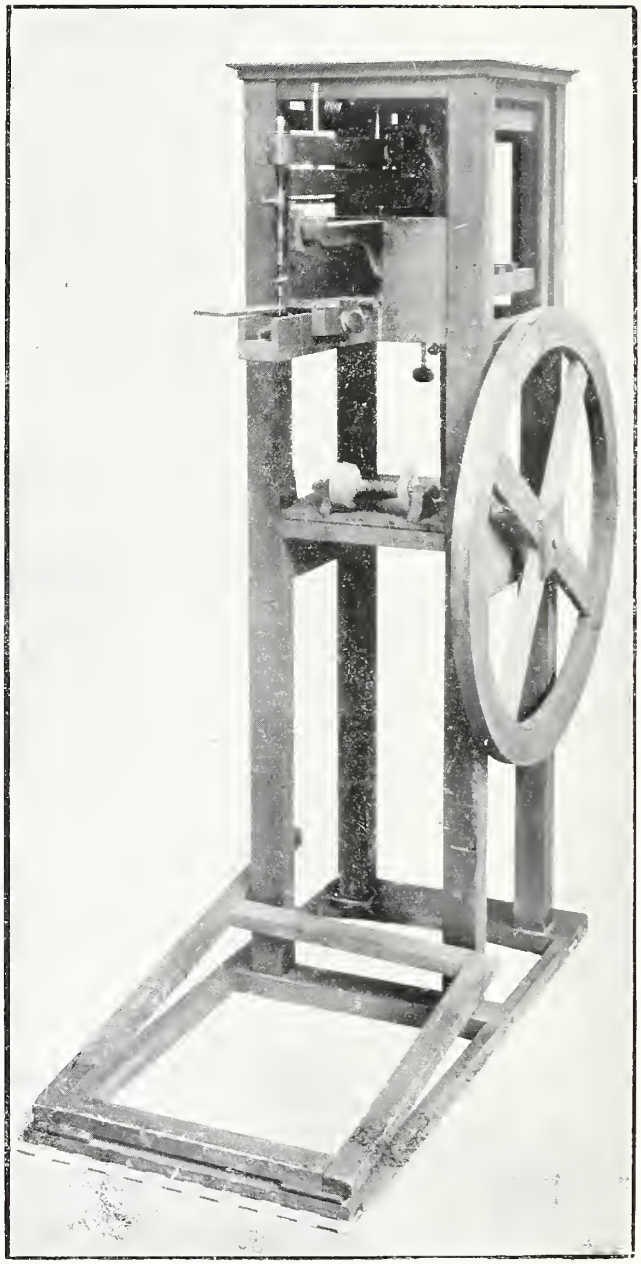
There may, of course, be much said from this point of view, but it would hardly serve any good purpose to discuss it here. We have to deal with things as they are, and not as we think they should be, and any prejudices or predilections possessed on the score of craftsmanship, beauty in dress, the fostering of art, or what not, must be subjugated. We must assume that the introduction of the sewing machine has tended to progress, and beneficial results have accrued as a consequence.

One of the many benefits derived from the application of the sewing machine to the making of garments, is the way it has economised labour, and, at the same time enormously increased the output. Without this labour-saving invention it is not too much to say the supply of clothing would never have been able to keep pace with the demand. Not only this, instead of increasing the cost of production it has decreased the cost of clothing to such an extent that well-made garments of fairly good and substantial materials are to-day within the reach of the poorest. As a result, the working classes have become notably better dressed, and their children better fed; and what this has meant to the community in the increase of self-respect and dignity, and general all-round improvement in the tastes and conduct of the artisan population, the sociologist can compute.

To the workers in the tailoring trade it has been the means of considerably lightening their burdens. It could be readily demonstrated how the sewing machine has shortened the hours of labour, rendered the work less arduous and exacting, and even increasod wages. It has thus been the instrument of finding remunerative and congenial employment for an ever-increasing population of both sexes, putting into their hands a craft—as far as tailoring is concerned—that is useful, instructive, edifying and educative.

But, besides the universal use of the sewing machine in all the multifarious industries concerned with the making of wearing apparel, no matter what the materials employed, it is largely utilised in numerous other trades and callings where sewing or stitching is imperative.

Furthermore, it is the housewife's friend and daily companion, and occupies a prominent position in every home, and who can calculate the hours of toil and drudgery



THIMMONIER'S SEWING MACHINE, 1830.

and monotony saved by its constant use ?

Other enormous gains to the community directly through the inception of the sewing machine, might be adduced did we care to pursue the matter ; but sufficient has been suggested to emphasise the point, and open up the field for those who care to further explore. How the world wagged previous to the discovery of this wonder-working device the present generation cannot conceive.

HISTORICAL.

The first practicable sewing machine was invented by Thomas Saint, cabinet-maker, in England, in 1790, and his drawings embody many of the features that have now become permanent. This stitch, however, was of the single thread or chain type, and two needles were required, one acting as an awl, and the following one, with a notched end, passing the loop through the prepared hole ; the machine was intended for leather sewing.

In 1830 Barthelemy Thimmonier, a tailor, of St. Etienne, patented in France a sewing machine which was employed in making uniforms in Paris in 1841. About this date there were eighty in use, but a mob destroyed them all.

Thimmonier constructed fresh machines which, it is stated, would make 200 stitches per minute, and this improved type is described and illustrated in his English patent of 1848. One of his machines was shown in the Great Exhibition of 1851, but was unnoticed, and the inventor died in poverty and obscurity in 1857. His machine did a chain stitch, and used a single-pointed needle with a side notch for the eye.

In the year 1841, in England, Newton and Archbold patented a chain-stitch machine.

The real development of the sewing machine as a competitor with hand labour, however, began with the machine patented by Elias Howe, on September 10th, 1846. Although Howe's claim to the origination of the sewing machine has been disputed and disparaged, he is entitled to the credit of having invented the first automatic machine using two threads. The history of the sewing machine and the struggles of Howe to get his invention recognised, reads like a romance. The following is a brief account :

Elias Howe, the inventor of the shuttle sewing machine, was born in 1819, in Spencer, Massachusetts. When the idea of a sewing machine entered his mind he was twenty years old, and a machinist in the shop of an ingenious mechanic in Boston. Young Howe overheard a capitalist remark to his employer that an independent fortune would be insured to the inventor of a sewing machine, and forthwith the idea seized him that a stitching machine was practicable.

While watching the operation of sewing as performed by hand, his uppermost thought was what a waste of power to employ the ponderous human arm, and all the intricate machinery of the process in performing an operation so simple, and for which but little strength would suffice ! Why not draw twelve threads through at once, or fifty ? And sometimes, while visiting a shop where Army and Navy clothing was made, he would look at the heaps of unsewn garments, all cut alike, all requiring the same stitch, the same number of stitches, and the same kind of seam, and say to himself : " What a pity this cannot be done by machinery ! It is the very work for a machine to do ! "

HOWE'S SEWING MACHINE.

It was not until Howe was four years older, and married, with a family to support upon nine dollars a week, that the pressure of poverty and the extreme fatigue he suffered by reason of his daily work being too heavy for him, caused his mind to again concentrate itself upon the idea of a sewing machine, which he had heard, four years before, would be an "independent fortune" to the inventor. He wasted many months on a false scent. When he began to experiment his only thought was to invent a machine which would do what he saw his wife doing when she sewed. He took it for granted that all sewing must be done in this way, and his first device was a needle pointed at both ends, with the eye in the middle, that should be caused to work up and down through the cloth, and carry the thread with it at each thrust.

Howe brooded over this impracticable conception for some time, and cut many a basket of chips in his endeavour to make something that would work such a needle as to form the common hand-stitch, but he could not accomplish it.

One day, in 1844, the thought flashed upon him : " Is it necessary that a machine should imitate the performance of the hand ? May there not be another stitch ? " This was the crisis of the invention. The idea of using two threads and forming a stitch by the aid of a shuttle and reciprocating needle, with the eye near the point, soon occurred to him, and he felt that he had invented a sewing machine. It was in the month of October, 1844, that he was able to convince himself, by a rough model of wood and wire, that such a machine as he projected would sew.

The practicability of the invention could not be exhibited or tested except by a machine of steel and iron, with the exactness and finish of a clock, and Howe, who was reduced about this time to the greatest hardships, could not provide even the raw material for such a machine.

Fortunately for the poor inventor, at this time he fell in with a former schoolmate who advanced him money for materials and tools, and also provided a home for him and his family, giving up his garret for the purpose of a workshop. In return for all this a partnership was arranged, each to take one-half of the proceeds of the patent rights, if the machine proved to be worth patenting.

All the winter of 1844-5 Howe worked at his machine. His conception of what he intended to produce was so clear and complete that he was little delayed by failures, but worked on with almost as much certainty and steadiness as though he had a model before him. In April he sewed a seam with his machine. In the middle of May, 1845, he had completed his work. In July he sewed by his machine all the seams of two suits of woollen clothes, one for himself and one for his partner, and this sewing outlasted the cloth. This, Howe's original machine, may still be seen in New York.

Elias Howe, like many other inventors, found that when he had completed his machine his difficulties had but begun. After he had brought the machine to the point of making stitches he went to Boston to get a tailor to come to Cambridge and arrange some cloth for sewing, and give his opinion as to the quality of the work done by the machine. The fellow-workers of the man to whom he first applied dissuaded him from going, alleging that a sewing machine, if it worked well, must necessarily reduce the whole fraternity of tailors to beggary ; and this further proved to be the unchangeable conviction of the tailoring trade for the next ten years. It is quite probable that the machines first made would have been destroyed by violence but for another fixed opinion of the tailors, which was that no machine could be made that would really answer the purpose.

HAND *v.* MACHINE.

This machine was then publicly exhibited, and at the Quincy Hall Clothing Manufactory, Mr. Howe challenged five of the swiftest sewers in the establishment to a race with his machine. Ten seams of equal length were prepared, five of which were given to the girls, and the other five were taken in hand by Mr. Howe. The result was that the machine had run up the five seams when the hand-sewers were little more than half through with their five.

One would think that such a convincing demonstration would have satisfied the most sceptical, and that orders for the machine would have poured in by the hundred. As a matter of fact not a single

machine was ordered, and no tailor, by word or deed, gave the inventor the least encouragement.

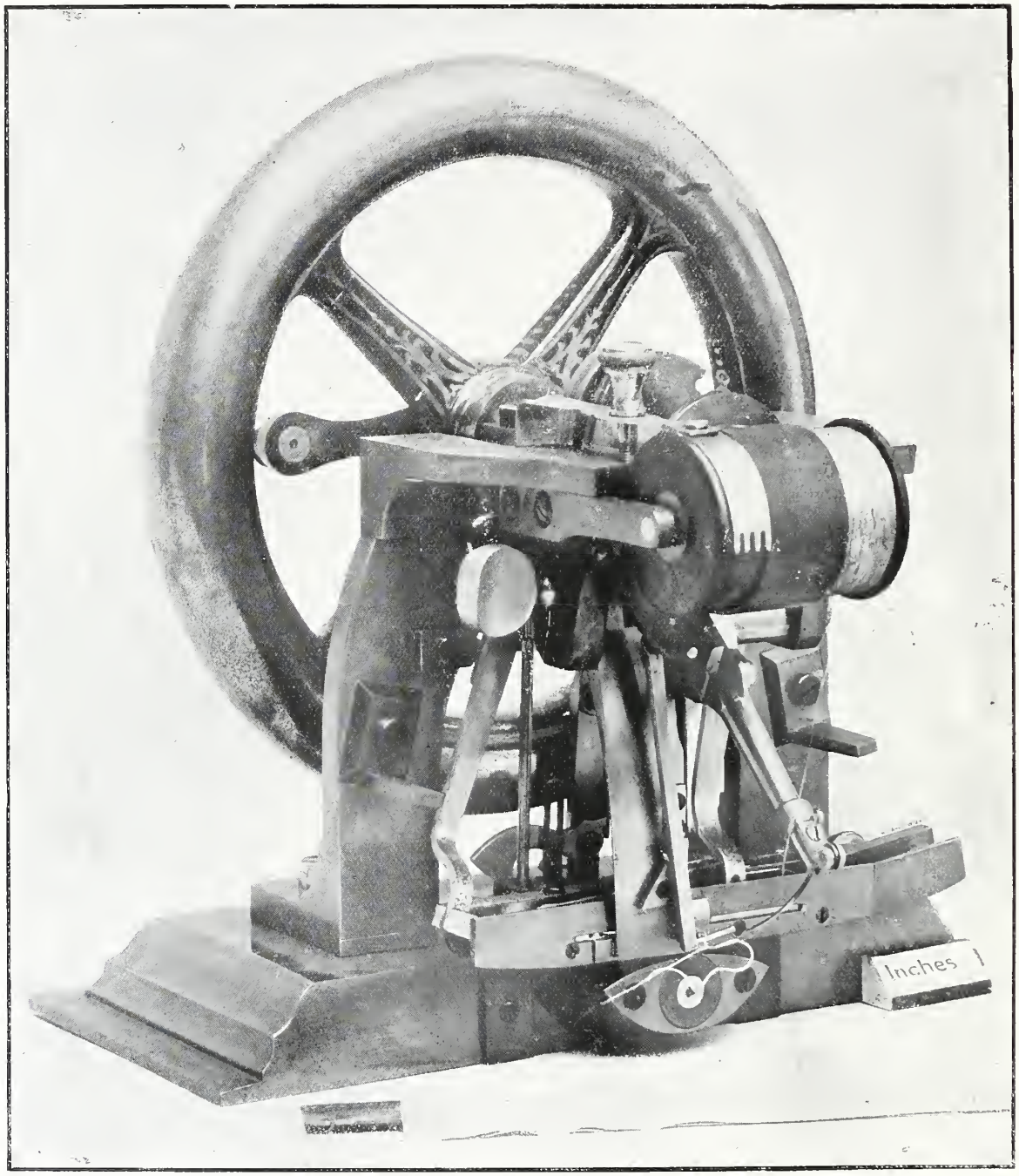
Some objected that the machine did not make the whole garment; others dreaded to encounter the fierce opposition of the journeymen; while not a few really thought it would beggar all hand-sewers, and refrained from using it on principle.

Patenting the invention in America, but meeting with no support, he set sail for England in 1847, selling his machine for the sum of £250 to a corset-maket in Cheapside, London, by the name of Thomas.

It took Howe eight months to adapt his machine to the work required, and at the end of that time he found himself in the direst poverty.

Borrowing money in order to send his wife and children back home, a few months later he pawned his precious first machine and his latters patent, and himself took passage to America, landing in New York in April, 1849, with half-a-crown in his pocket. Here he sought and obtained employment in the machine shops.

Meanwhile, his first machine on the



HOWE'S ORIGINAL SEWING MACHINE, MADE 1845.

shuttle principle was being imitated and sold about America, and also several ingenious mechanics, while he had been away in London, had turned their attention to the making of sewing machines.

Howe at this time, when at the lowest ebb of his misfortunes, received help from his friends—and also prevailed upon a capitalist to join him in defending his rights, and many lawsuits followed, the outcome of which was that Howe was acknowledged to be the first inventor of the shuttle sewing machine.

Shortly afterwards he was established in New York as a manufacturer of sewing machines, and in a few years, having bought up the remainder of his patent, was the worthy recipient of a princely revenue derived from their sale.

In the year 1867 he was decorated with the Cross of the Legion of Honour by France, but he did not long enjoy the honours and rewards which his invention brought him, for on the 3rd of October, 1867, Elias Howe died at Brooklyn, New York.

OTHER INVENTORS.

In the year 1849, Mr. Allen B. Wilson invented a sewing machine, and it is said, without ever having heard of or seen any sewing mechanism ; another illustration if this be true, of the saying that sometimes a certain idea may be said to be in the air, and to effect many persons in different places. This was the first really practical machine, making a lock stitch and combining all the necessary elements. It had a double-pointed shuttle, and a needle similar to Howe's, and worked in a like manner by a vibrating arm, and had the first feeding device which enabled the operator to guide the work in any direction at will.

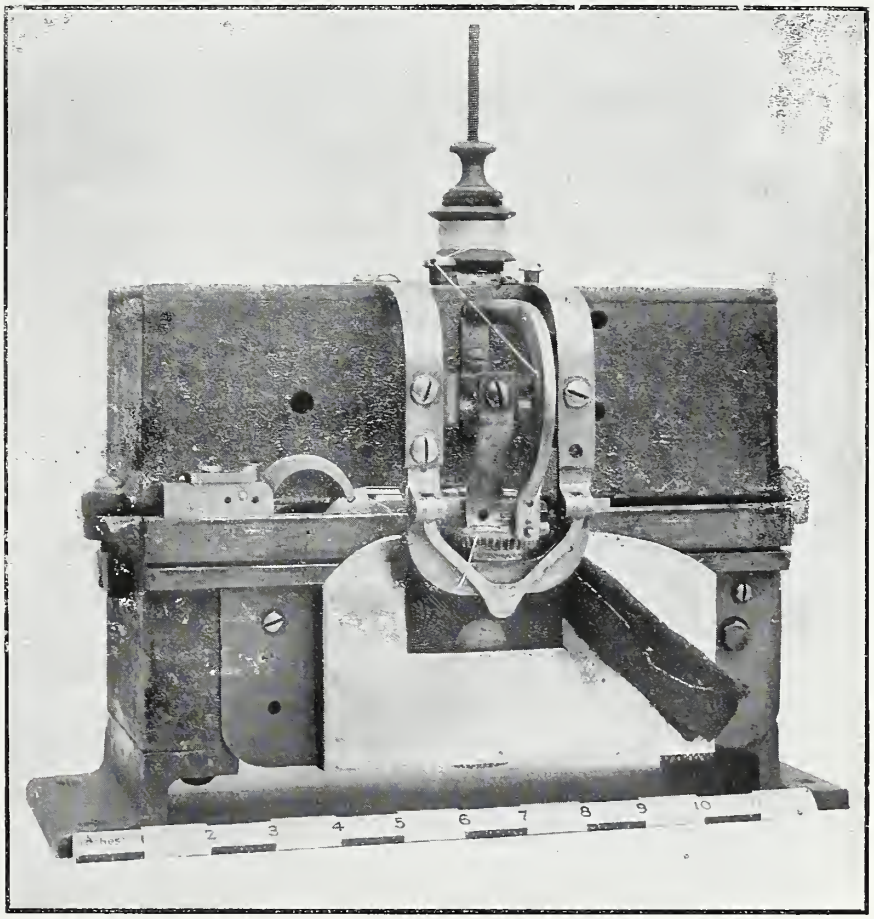
This invention was patented in 1850, and contained the third and last element necessary to produce a complete sewing machine, namely, a practical feed. This feeding device, since known as the Wilson two-motion rough service feed, consisted of a bar having teeth or points inclining forward, together with a smooth plate and spring above, which pressed the material upon the rough surface without being attached to it. As the bar was thrown forward the teeth engaged the cloth and moved it forward the length of a stitch, and then retreated. By this device a continual feed was secured, with which seams of any degree of curvature or angle could be sewed. Mr. Wilson afterwards improved his invention, which improvement is now found in all sewing machines.

Next came Mr. Isaac M. Singer, who, in 1850 invented the machine widely known as the "Singer Machine," substituting a straight needle for Howe's curved one, and also using Howe's shuttle. Singer also applied a rotary shaft for driving the needle instead of a vibrating needle-arm.

Mr. C. F. Judkins had a sewing machine of his invention on view at the Exhibition of 1851, which, it is stated, worked at the rate of 500 stitches per minute. It was a lock-stitch machine, and the shuttle, which was always invisible, was held in a carrier working in guides at the front of the machine.

Models of all the sewing machines illustrated in this book, and many others, may be seen in the Science Division of the Victoria and Albert Museum, South Kensington.

Further improvements in sewing machine mechanism were patented during the years 1851 to 1854, and about the latter time the sewing machine business began to assume a practical business proposition. The firm of I. M. Singer and Co. had been formed to manufacture the Singer machine, the



JUDKIN'S SEWING MACHINE.

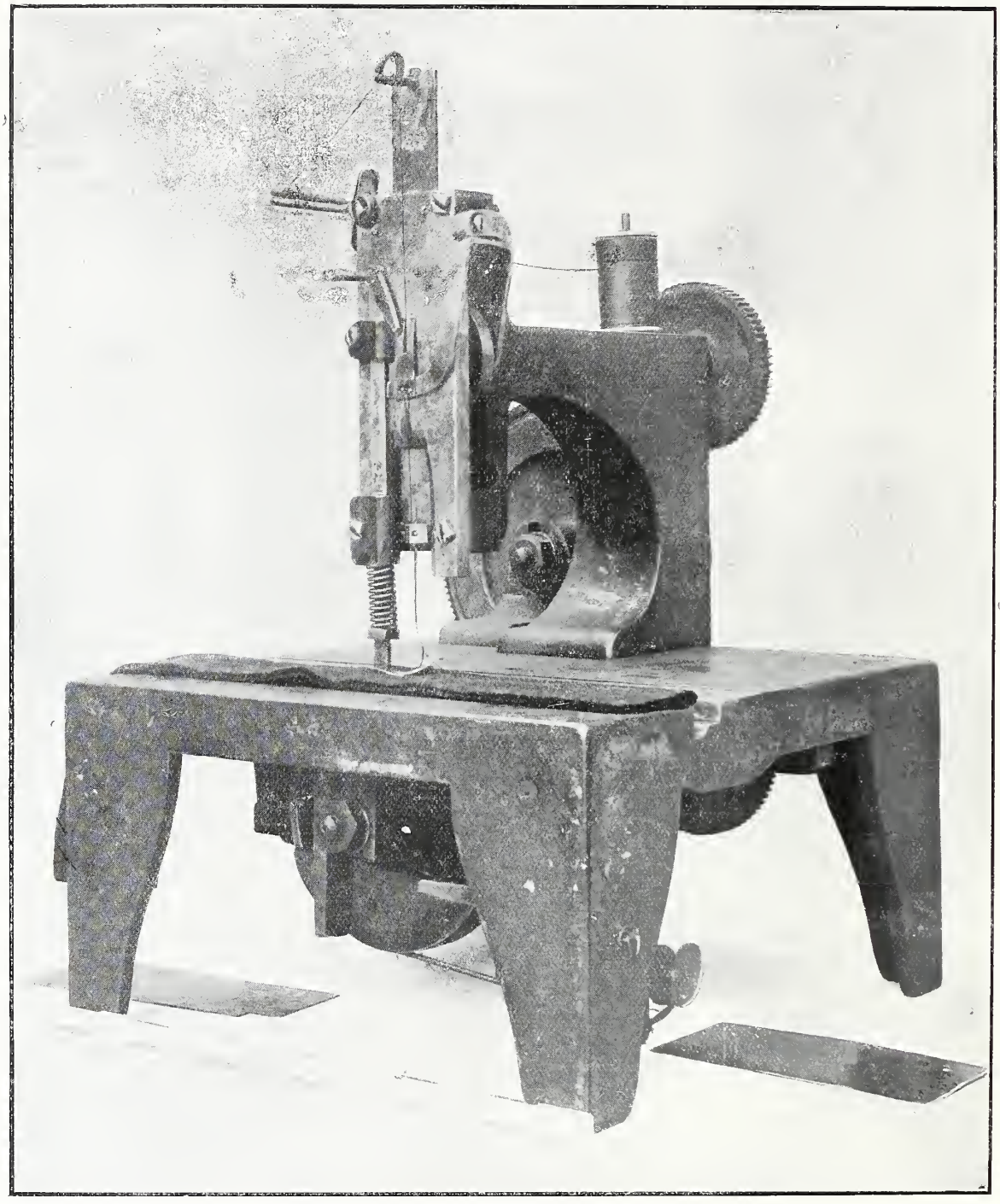
Mr. W. F. Thomas, of Cheapside, London, patented a lock-stitch sewing machine in 1853. Previously, it will be remembered, he had purchased the English interests of Howe's patent.

Although Howe was the first man to make a practical success of the lock-stitch sewing machine, he was not the first inventor of the devices that rendered it practicable. In 1832-34, Walter Hunt constructed such a machine with an eye-pointed needle and an oscillating shuttle, and the eye-pointed needle had been patented in England in 1841 ; but Howe re-invented them, and made the machine a commercial success.

Wheeler and Wilson Sewing Machine Company, and the Grover and Baker Company to make their machines. These three companies began at once in active competition, introducing their machines for manufacturing purposes only ; as it was at that time supposed that the business would be limited to that branch of sewing.

Another inventor was Mr. James E. A. Gibbs, who invented the single-thread rotating hook machine. Mr. Gibbs gives the following account of this ingenious machine :

"My attention was first called to the subject of sewing machines in the year 1855,



ORIGINAL SINGER SEWING MACHINE.

by seeing a plain woodcut of a Grover and Baker machine in a newspaper advertisement, and, being of a mechanical turn of mind, it at once excited my curiosity to know how it could possibly sew.

"As I was then living in a very out-of-the-way place, far from railroads and public conveyances of all kinds, modern improvements seldom reached our locality; and not being likely to have my curiosity satisfied otherwise, I set to work to see what I could learn from the woodcut, which was not accompanied by any description.

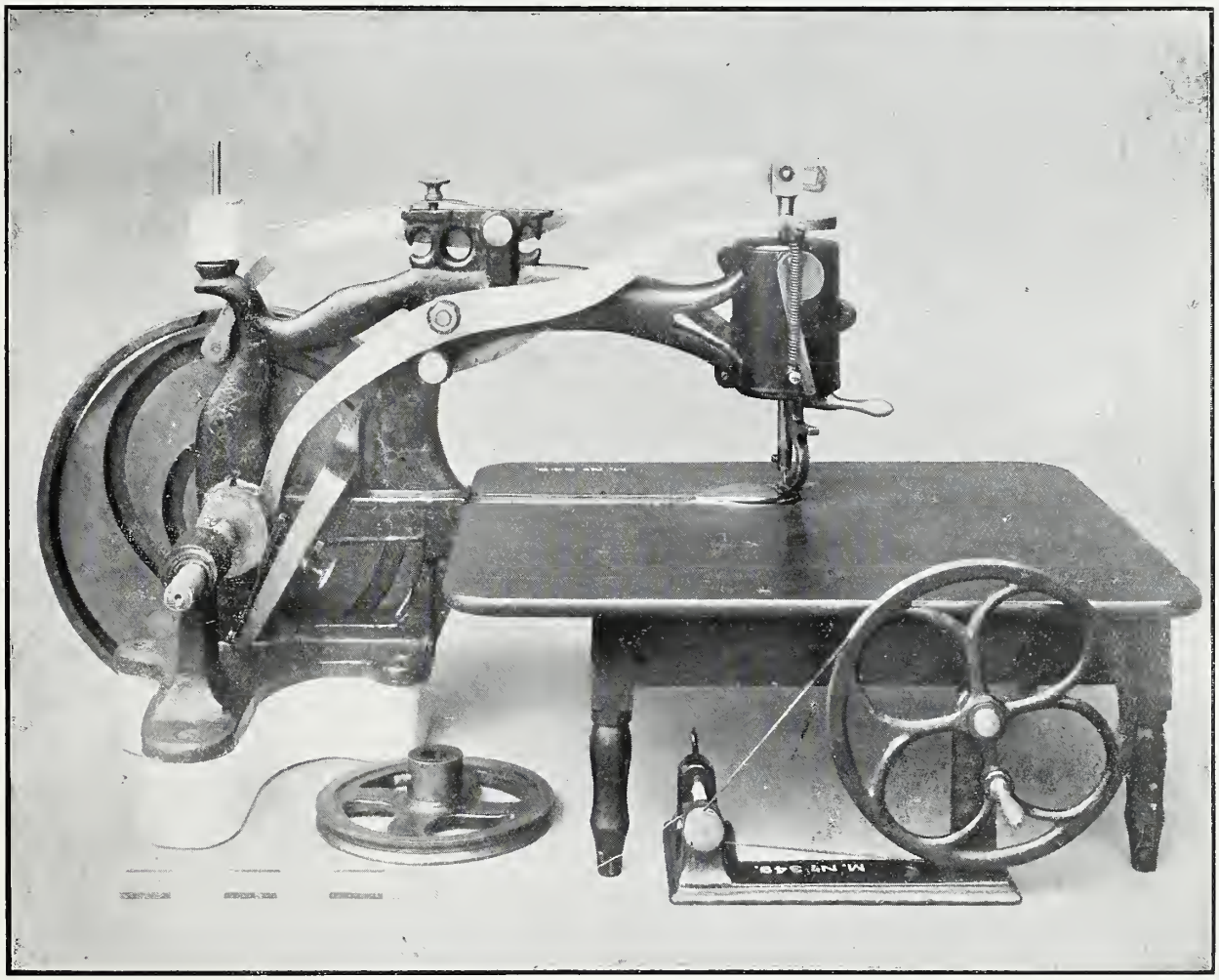
"I first discovered that the needle was attached to a needle-arm, and consequently could not pass entirely through the material, but must retreat through the same hole by which it entered. From this I saw that it could not make a stitch similar to hand-work, but must have some other mode of fastening the thread underneath, and

among other possible modes of doing this, the chain-stitch occurred to me as a likely means of accomplishing the end.

"I next endeavoured to discover how this stitch was or could be made, and from the woodcut I saw that the driving shaft which had the driving wheel on the outer end, passed along under the cloth plate of the machine. I knew that the mechanism which operated on the stitch must be connected with, and actuated by, this driving shaft. After studying the position and relations of the needle and shaft with each other, I conceived the idea of a revolving hook on the end of the shaft, which might take hold of the thread and manipulate it into a chain-stitch. My ideas were, of course, very crude and indefinite; but it will be seen that I had the correct conception of the invention afterwards embodied in my machine.

"Having no further interest in view than to satisfy my curiosity how sewing by machinery could be done, and caring little whether I had the correct idea or not, I gave the matter no further attention or thought until, during the month of January 1856. At this time, while on a visit to my father in Rockbridge Co. Virginia, I happened to go into a tailor's shop where there was a Singer's sewing machine working on the lock-stitch shuttle principle. I was very favourably impressed with its utility, which was far beyond my previous impressions of the development of the art; but, at the same time, I considered the machine entirely too heavy, complicated and cumbersome, and also that the price was exorbitant. These considerations led me to apply myself to inventing and producing a more simple, cheap and useful machine. As soon as I reached home I began to apply my mind to this subject.

"I first made a small, imperfect hook on the end of a piece of wire, by which I demonstrated that the chain-stitch could be made by a hook revolving on the end of a driving shaft, and first thought of making a machine in this way; but after producing some samples of a chain-stitch, and testing them, I became dissatisfied with the stitch, and also still labouring under the delusion that probably the Grover and Baker machine was constructed in that way, I concluded to turn my attention to the lock-stitch, and made a rude model out of wood of a shuttle lock-stitch machine. My family was at this time dependent upon my daily labour for support, so that I had very little time to spare for my experiments, working only at nights and in bad weather. I also laboured under great disadvantages for want of tools and materials having to make my own needles, and construct my shuttles of wood, as I was then a carpenter only. By the 1st of April, 1856, I had completed my model, and succeeded in interesting my employers in my invention so far as to induce them to



THOMAS'S SEWING MACHINE, PATENTED 1853. (*See page 5.*)

furnish the capital wherewith to take out letters patent, and develop the machine. During the month of August of the same year I came to Washington to take out my letters patent, and while there I examined the models in the office, and also some of the machines then on the market.

" I ultimately fell back upon my old idea of a single-thread machine with greater confidence in its success ; but while making the first one the idea occurred to me to make the hook stationary, and to vibrate the needle instead. This needle, however, I found to be already in use by others, and I finally produced a sewing machine with a rotating hook or looper, and a needle having a vertical motion only."

Mr. Gibbs was the inventor of several improvements in sewing machines, but the final outcome has been the well-known Wilcox and Gibbs machine.

When one considers the benefits accruing from the use of the sewing machine, one marvels at the prejudice that for a long time existed against it.

In the boot and shoe industry at Northampton, about the year 1870, thousands of men struck work and left the town rather than use the sewing machine.

At Stafford, where women's boots and shoes are made, the cry was everywhere for women to work the sewing machine; yet, when the agent of Howe's machine went into the market place, and in the presence of 10,000 women, sewed before their eyes, as they had never sewn, they were ready to tear the man to pieces, and did, in fact drum him out of the town.

SEWING MACHINE STITCHES.

Sewing machines now are made in many modified forms to suit special purposes, but roughly they may be divided into two classes, those for domestic use, usually driven by treadle or hand, and machines of special construction for use in the various industries, driven by power.

The principle upon which the machine works is the same in all types : the needle is clamped to a bar or arm, which moves vertically up and down at great speed, piercing the material to be stitched, which is placed upon a flat or curved steel plate. The needle is made with the eye near the point, the eye passing through the material which is moved automatically by small distances at a time, to form the stitch.

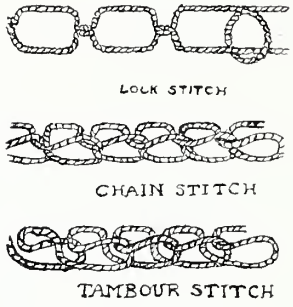
Two kinds of stitches are chiefly in use, viz., the single-thread or chain-stitch which can be unravelled by pulling the end of the thread, and the double-thread or lock-stitch, in which an upper and lower thread are used, locking together in the centre of the material; this stitch cannot be unravelled, but must be cut through if the material is to be taken apart.

THE CHAIN-STITCH.

In the chain-stitch, or single-thread machine, which was that first invented, the needle passes down through the work to the bottom of its stroke, and then lifts a little so as to leave a loop of thread, which, by the revolving hook, is opened and held while the needle retires. When the needle again enters the fabric in a fresh place it passes through the loop retained by the hook, so securing it, while the hook disengages itself and enters the fresh loop, and so on.

The high speed possible with these chain-stitchers, and the ease with which their work may be undone, are great advantages ; but for many purposes the sewing is not sufficiently secure, so that domestic machines are not usually of this class.

The chain-stitch has a plain, regular appearance on the upper side of the fabric, while it resembles a chain on the under side.



THE LOCK-STITCH.

In the lock-stitch machine the needle descends and throws out a loop as before ; through the loop a second thread is passed, either by a vibrating shuttle, or the loop is passed over the under spool of thread by a steel circular hook having a rotating movement. When the needle rises the second thread is drawn tightly up to the under side of the material, and the two threads interlock together in the centre.

To facilitate the formation of the loop, and to permit the under thread to be passed through it, the needle is made to pause for an instant, and descend again in the up-stroke just after it has commenced to rise. The upper thread, after leaving the reel, which is carried on a pin fixed to the upper part of the machine, is passed between steel plates pressed together by an adjustable spring. This arrangement is termed the tension, and its object is to put a strain upon the thread and consequently determine the tightness of the stitch ; it then passes through a slot or hole in the upper end of the needle-bar to the eye of the needle. The stitch is drawn tight by the rising of the needle, and as the thread would be left slack on the downward movement, a vibrating arm is provided, termed the automatic take-up, which engages the thread and draws it tight, releasing it at the moment of formation of the loop and end of the needle up-stroke.

The lower thread is wound on a spool carried within the shuttle or rotating hook, and also provided with tension arrangement. The material is kept from rising with the needle by the presser-foot, a forked plate of steel carried at the end of a bar, parallel with the needle-bar, and pressed down by a spring which is adjustable. The material is carried forward during the stitching operation by a small toothed bar or " feed-dog," which rises through a slot in the cloth plate underneath the presser-foot, engages with the cloth, forces forward the length of the stitch, then falls below the cloth plate, and moving back, rises again and repeats the operation.

The lock-stitch has a plain and regular appearance, alike on both sides of the cloth, the interlocking point being in the body of the goods.

THE TAMBOUR STITCH.

The tambour stitch, as the name implies, is used for embroidery work, and for ornamentation purposes on fabrics. It resembles somewhat in appearance the chain-stitch, but, of course, is not used where strength is required, or where any strain would be put upon the stitches.

A sewing machine that produced this stitch was patented by Morey and Johnson, about the year 1850.

Various attachments are provided upon most sewing machines for hemming, cording, braiding, ruffle-ing, tucking, etc., etc.

CARE OF THE MACHINE.

All the working parts of a sewing machine should be oiled with thin oil ; if the machine works stiffly it is probably due to the bearings being clogged with dry or thick oil. This can be removed by soaking in paraffin oil. The needle is made with a long groove on one side and a short one on the other : the long groove should be away from the shuttle, and the thread passed through it. The wheel of the machine may rotate to or from the operator, according to the style of machine used, and the work is fed from front to back, the machine being placed with the wheel to the right, and the needle to the left of the operator.

The position is, however, different in vibrating arm machines, and in some manufacturing machines. In this case the needle is directly in front of the operator, and the work travels from left to right, and may travel either way alternately.

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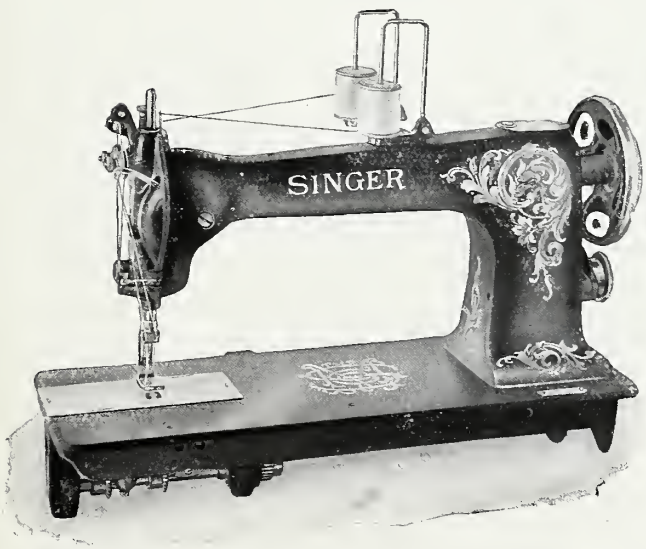

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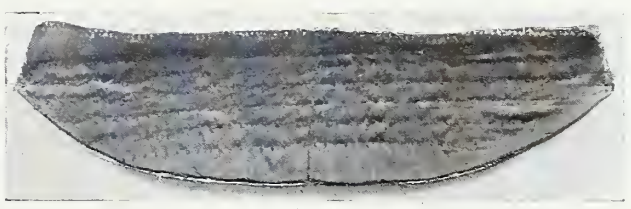

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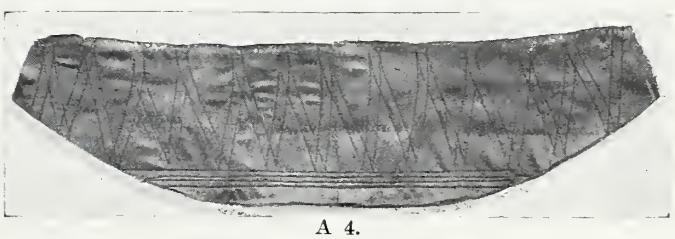


A 4.

JACKET MAKING ON SINGER SEWING MACHINES.

TAILORING SEWING MACHINES.

Machines made specially for tailoring have a higher frame and are stronger than those for household work. When used for stitching leather, the needle is made with a flat point something like a spear.

Buttonhole machines make the buttonhole of the usual shape, and of any size, and with a "purl" stitch, on the finished side. The work is clamped in a plate, which is moved automatically; the needle has a vibrating movement and sews round the entire shape of the buttonhole, the cloth or garment being moved by the automatic clamp plate to follow the shape of the buttonhole. When the buttonhole is completed the machine stops automatically. The hole is cut through by a plunger knife fitted in a slide close to the needle; the cutting may be done either before or after the stitching. In the case of leather the buttonhole is usually punched out by hand before sewing.

For stitching on flat buttons with two or four holes, each button is placed in a slide, which takes the place of the presser-foot and holds it is position; the needle vibrates, passing first into one hole and then into the other.

In fancy stitching the needle has a vibrating movement, which follows the design of the stitch, the work being fed along in the ordinary way; several needles may be used together.

For stitching such work as the seams of sails, the material is fixed in a travelling frame, which moves the work under the needle, the machine being fixed. Carpet-seams are stitched by a moving machine which travels along the carpet on a fixed track, in the frame of which the carpet is held vertically. To stitch two parallel seams at a wide distance apart, a special machine made in two parts is used. Each part has a complete stitching apparatus, but both are driven by one shaft. One part is fixed, but the other can be removed away to the required distance apart on the lines of stitches.

In the wholesale tailoring and clothing trades the machines are arranged in lines on long tables or power benches, and driven from a common shaft, a clutch or friction gear worked by the foot of the operator, and starting and stopping the machine as desired.

Many styles of sewing machines are made, one firm alone turning out nearly one thousand varieties for manufacturing purposes, embodying many ingenious devices for the automatic control of the work.

In size, sewing machines vary from the small toy which can be clamped to a table, to the massive tool supplied for belt stitching which weighs $3\frac{1}{2}$ tons.

CHANGES IN GARMENT MAKING.

It almost goes without saying that the tailoring trade in its many branches has, during the past two or three decades, undergone considorable change, owing to the introduction of improved sewing machines with mechanical power.

In order to form some idea of the extent of these changes, and the effect upon the methods of garment making, it is no exaggeration to say there are hundreds of different sewing machines for tailoring on the market, including the various appliances and attachments used in the process of manufacturing all kinds of wearing apparel.

Obviously, for any one person to master and become proficient in the working of all theso would necessitate years of close and continued application, such as no one would feel disposed to give, hence the adoption of divisional methods of production. In some branches of the trade this system has been utilised to such an extent as to have become an art, and the various processes have become divided and subdivided to such a degree that many operatives are kept the whole day long at one particular operation, and, as may be readily understood, they become very dexterous and marvellously expert in a very short time.

When all these facts are taken into consideration, and many others that might be adduced, to try and argue against the use of the sewing machine at this late hour is equivalent to attempting to put the clock back, or to use a more classical illustration, is on a par with Mrs. Partington vainly striving to stem the ocean's incoming tide with her domestic mop.

It must, therefore, be accepted as an instrument of production in the making of clothes, and true wisdom consists in making the most and best of it. If an evil, then it must be looked upon as a necessary evil, and accordingly exploited to the best advantage.

These remarks apply particularly to the bespoke branch of the trade, and not to the ready-made section, for long ago the clothing manufacturers realised the possibilities of the sewing machine, and have utilised it to its fullest extent.

HAND *v.* MACHINE SEWING.

It is somewhat difficult, and perhaps hardly fair to attempt to draw a comparison between hand and machine sewing. Doubtless, however, the idea of probably all the inventors of the sewing machine was not only to demonstrate that the work could be made in much less time than by hand, but that the quality of the work should be quite as good.

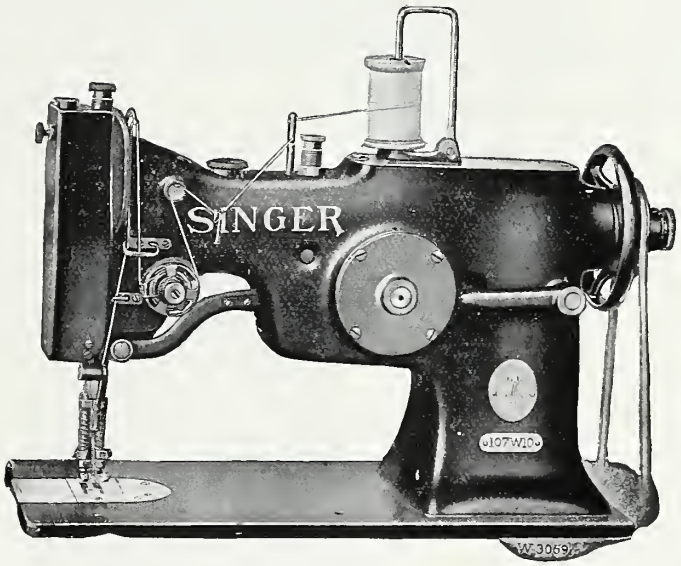
Hand-work must of necessity always be irregular, no matter how well performed, and is constantly subjected to strains at particular points, while the machine work, being regular, receives the strain upon larger portions of the seam and suffers less. Lock-stitching may be said to be better adapted for ordinary work than hand-stitching, but good hand-work stands wear and tear better than the single-thread stitch made by machine and usually wears better than lock-stitching carelessly and losely performed.

The latter statement explains the prejudice that still exists in some quarters against the sewing machine. Many operators do not possess sufficient knowledge of the possibilities of the machine they control; they do not thoroughly understand the use of the various mechanical appliances provided, hence the quality of the work suffers, and the machine is hastily condemned.

It hardly needs mentioning that whilst the method of putting the garment together by the machine is different to that of hand-work, the result aimed at must be the same viz., a properly made garment. If this were not so then the sewing machine would be of little use, except for the cheapest class of work, where quantity is the only consideration. The claim that the sewing machine in the hands of an expert machinist is capable of doing almost everything that can be done by hand, in most cases equally satisfactorily, is by no means an exaggeration of the facts. Given a machinest who knows how to formulate and regulate the stitches according to the nature and texture of the material, in the same manner as the sewing tailor selects his needle according to size, the results should not differ greatly in the final inspection.

Tho method pursued in hand-sewing is from right to left, lengthwise; that of machine sewing from left to right; but when the work is completed it should bear a close resemblance, both in the matter of the durability of the sewing and the appearance of the finished garment. The machine work should not exhibit the slightest trace of stretching; if it does then the machinist is at fault.

In the subdivisional system of garment making now universally employed in all classes of trade, the sewing machine is, of course, the main factor. Now that the capabilities of the sewing machine are being realised, and its possibilities in the hands of skilled operatives understood, divisional methods of tailoring are no longer looked upon with the suspicion they were ten or fifteen years ago. The charge of sweating against those who have adopted it cannot hold water, for to-day firms of the highest reputation and commercial standing make no secret of the fact that their trade is made up on these modern and up-to-date methods.



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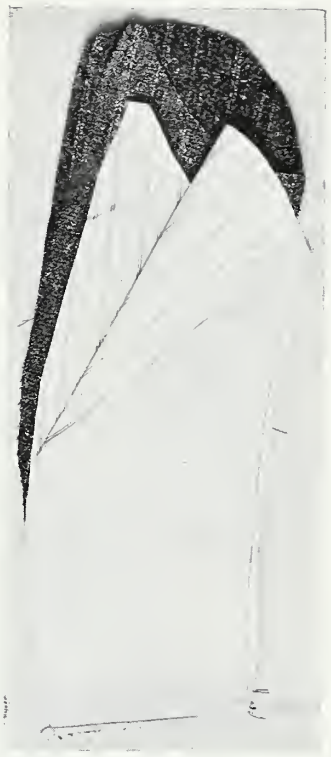

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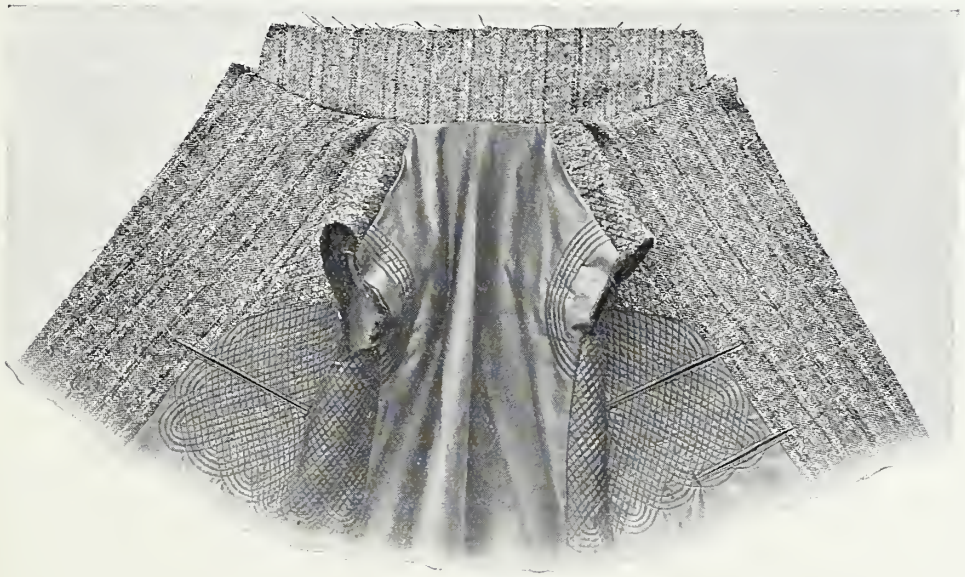

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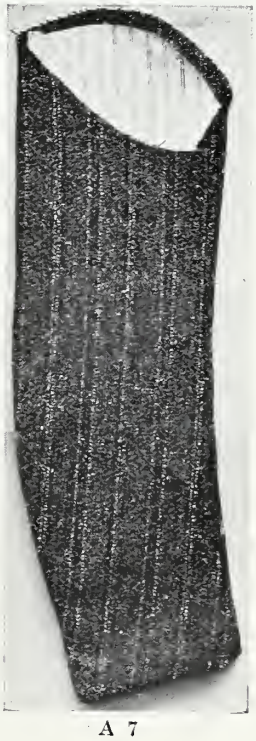


A 7

The divisional system of garment making when put into operation under proper organisation, effects large savings, for the following among other reasons :

A marked reduction of time in production.

Two or more operations produced simultaneously.

Elimination or lessening of the more laborious processes.

Cheapening of the minor operations.

Increased efficiency of operators.

Improvement of the general product of the factory, or workshop.

Extension of the field of labour selection.

thence to the waistcoat and trousers, showing the different stitching processes utilised thereon. The number of operations, and the amount of work upon a garment, depends, of course, upon the nature and quality of the garment. Obviously, different treatment is given to the high-class garment than to the cheaper-grade qualities.

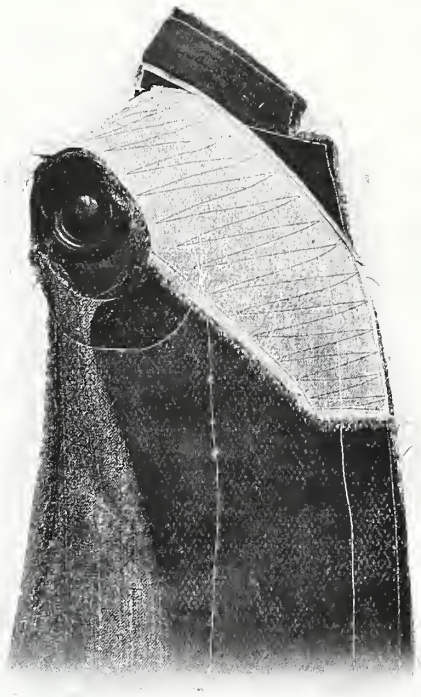
For the loan of the whole of the blocks for the illustrations herewith, we are kindly indebted to the Singer Sewing Machine Co., Ltd., 42 and 43, St. Paul's Churchyard, London, E.C.

long arm, rotary hook machine, Class 96-12. It is capable of speed up to 3,200 stitches per minute, and for all-round work is extensively used by the clothing trade. It is exceptionally light running, and thereby effects a continual economy in power costs.

This machine can be fitted with various attachments for different classes of work.

Another machine which is winning increasing favour for general stitching in the clothing trade is the 109W100 machine referred to more particularly in the later paragraph dealing with Edge Stitching.

No. A1 illustration shows a jacket in the



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MODERN SEWING MACHINES.

As some of the early sewing machines have been noted and illustrated in this book, and their evolution traced from the crude, cumbersome mechanical contrivances of over a century ago down to recent times, we propose now to give illustrations of the more modern sewing machines in their many makes and varieties, taking the very latest types as examples.

In order to make our descriptions as clear and as interesting as possible, we shall first of all outline, very briefly, the machines commonly employed in clothing factories in the making of ordinary lounge suits, also giving illustrations of the work performed.

A regular sequence will be followed, starting with the jacket and proceeding

MAKING A SUIT BY MACHINE.

THE JACKET.

When the garment is cut and trimmed, it is tied into three separate bundles—outsides, insides, and sleeves, respectively, each part of the garment having a ticket attached for identifying purposes and so that the operator's number may be entered as the section of work passes from operator to operator. These bundles of work being now ready for making up, they pass to the factory manager and in turn are handed to the operators—Outsiders, Insiders, and Sleevers respectively—who simultaneously proceed with the machining.

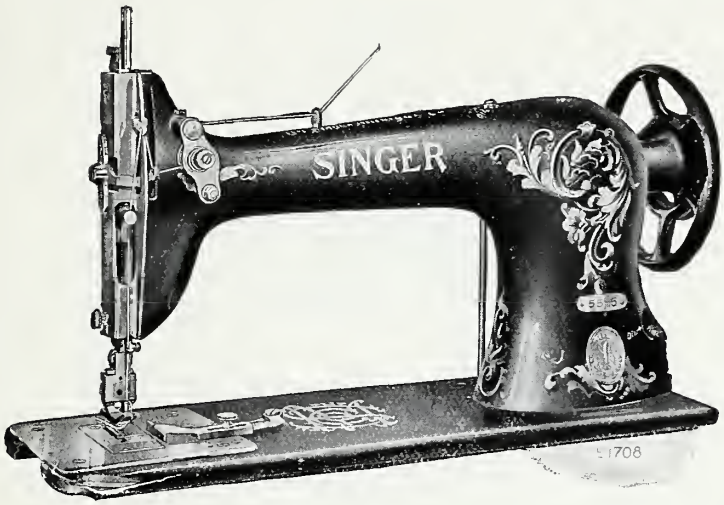
OUTSIDES.

The sewing machine represented in illustration No. 1 is a Singer high-speed,

early stages of making, the piecing up of the outsides, viz. : the making and inserting pockets, closing seams, the sewing-on inside of collar and bridling. Illustration No. 2 depicts a machine for collar and lapel padding. It is a zig-zag stitch machine fitted with a special attachment for the blind stitch padding of collars and lapels, as indicated by illustrations No. A2 and A3.

This machine is a very valuable time-saver, as operators quickly become proficient in the working of the machine, and with ease effect the desired set of the collar and lapels.

In No. A3 illustration the collar is turned over to show the blind-stitch effect on the under side. Illustration No. 3 represents a machine for collar stitching when a " padded " collar is not desired.



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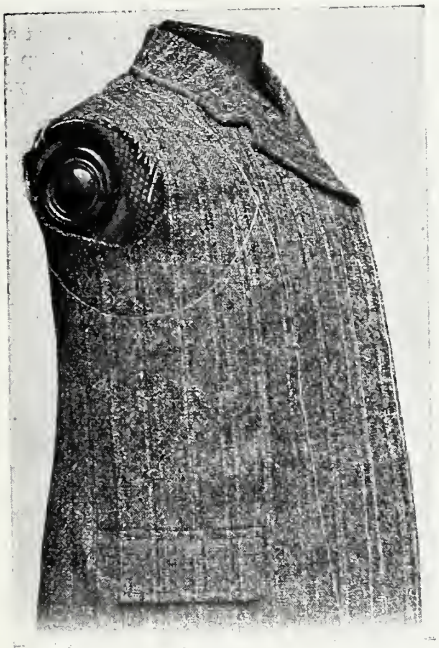

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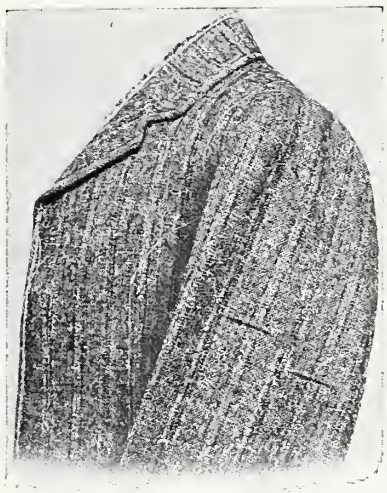

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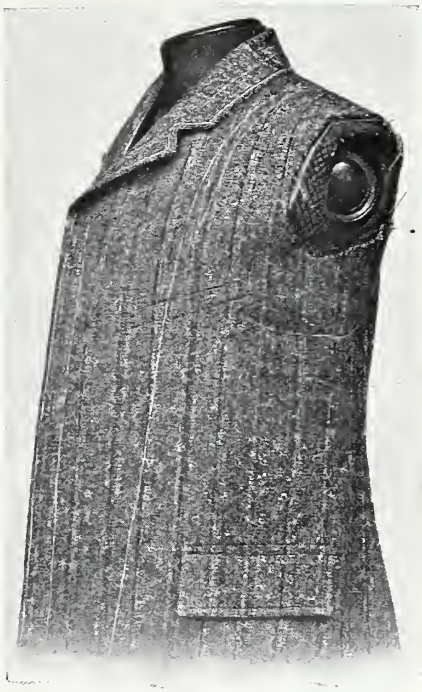

A 11.

It sews simultaneously two parallel lines of stitches—any suitable distance apart—it is fitted with reversible feed mechanism so arranged that the reversing action takes place while the machine is in motion. The result is that the collar can be stitched with extraordinary rapidity, and the stitching proceeded with from start to finish. The machine is easily learned and handled by inexperienced operators, and is a general favourite with clothing manufacturers, because of its efficiency, rapidity and simplicity.

Illustration No. A4 is a specimen of the two-needle reversible stitching on a collar.

The most suitable machine for Collar Joining is shown in illustration No. 4. The advantages of this machine will be apparent from the diagram showing the stitch.

INSIDES.

For lining making (Illustration A5) sewing linings to facings, making and inserting pockets, closing seams, etc., machine illustrated No. 1 is especially suitable. Fitted with Feller, it fells the edge of the lining and stitches it to the facing at one operation. The feller is rapidly thrown out of position when the

machine is required for plain stitching only.

In the ordinary stitching processes of sleeve-making, such as seaming one side of sleeve ; seaming one side of sleeve linings ; joining sleeve and lining at waist, and closing sleeve and lining, the same machine (Illustration No. 1) is extremely useful and universally requisitioned. Illustrations A6 and A7 show the sleeve and linings in the process of making.

UNDER BASTING.

The outsides, insides and sleeves now having been finished, they are passed to the pressing machine to have the seams pressed open, thereafter the outsides and insides passed to the under basting machine, and the sleeves to the sleeve-inserting machine to wait the arrival at this machine of the joined or bagged part of the garment.

Illustration No. 5 represents the machine for under-basting, It is a single thread chain-stitch machine producing long stitches and is used for basting the canvasses to the outsides. It can be handled with ease after very little practice, and soon pays for itself. See Illustration No. A8 for specimen of under-basting work.

BAGGING.

The outsides having been received from the under baster, the bagging process is commenced. Illustration No. 6 shows the machine for this purpose. It is fitted with a trimming knife, and a stay tape holder and tension device, hence in executing the stitching, the stay taping is attached and the edge trimmed at one operation. When this is accomplished the garment is ready to be turned right side out and thereafter passed to the out basting machine. See Illustration No. A9. As mentioned the machine is provided with a stay tape holder, and this latter is so arranged, that more or less tension can be applied to the tape in order to ensure the requisite curve to the garment. The operator, therefore, does not require to concern him or her-self with the tape during the stitching. It can be used as an ordinary stitching machine when desired, as the trimming knife and taping device can be thrown out of action at will.

OUT BASTING.

Outside basting is performed by the same machine as the under basting (Illustration No. 5) and the work it does is portrayed by Illustration A10. This basting machine effects so great a reduction in the cost of the basting operation that the wholesale clothier can afford to put more basting into the work, and thus improve the appearance of the garment while at the same time reducing the cost of production.

EDGE STITCHING.

Edge stitching is performed by a special machine eminently suitable (see Illustration No. 7). It is a high-speed compound feed machine, which ensures a positive and uniform movement of all the plies of material in the seam. This mechanical combination not only finishes the work more smoothly and evenly than is possible with other feeding mechanism, but it sews at the high speed of 2,800 stitches per minute.

As in this machine the needle, feed, and material all move forward together, the positive and uniform movement of all the plies of the material is secured. The great value of this uniformity is obvious, and the result is that this compound feed machine (which is known as the 109W100) although of comparatively recent introduction, is rapidly taking its place as a pre-eminently valuable machine for the clothing trade, not only for edge-stitching but for general stitching, the accuracy of feed enabling the operator to handlo the work easily and to match stripes accurately and rapidly.

Illustration A11 depicts the edge stitching this machine performs.

SLEEVE INSERTION.

Sleeve inserting is the special work of a cylinder arm machine—see Illustration No. 8. It has the advantage of a combined needle and upper feeds to facilitate the insertion of the sleeve. The illustration clearly indicates how suitable a cylinder arm machine is for the easy manipulation of this important operation.

The jacket representation No. A12 gives an idea of the effective manner in which this machine does its work.

The most suitable machine for arm scyes (sleeve heads) is that represented by illustration No. 9. This is a single thread chain stitch machine with a maximum length of stitch of $\frac{1}{2}$-in.

BUTTONHOLES.

Buttonhole stitching machines of Singer manufacture aro largely used in most clothing factories and sub-divisional workshops, various types of machines are furnished by the firm mentioned, such as machines for single and double purl buttonholes, open end buttonholes, or for buttonholes with the end straight bar tacked or with the taper bar as preferred One of the latest machines makes an imitation hand hole at the highest possible speed, and differs from the older type machines in that the movements are automatic throughout. The hole is cut before it is stitched, with the result that a non-gaping buttonhole of fine appearance is produced.

The older type buttonhole stitching machines are so well known in the trade that we consider it unnecessary to include the type among the illustrations, but as the new automatic buttonhole stitching machine is undoubtedly the machine of the future. we have pleasure in being able to show it by representation No. 10, while open-end buttonholes from the machine are illustrated by Illustration No. A13.

After the buttonholes have been stitched the garment is passed to the machine for bar tacking the ends. This machine makes a bar $\frac{1}{8}$-in. to $\frac{1}{4}$-in. long, as desired, using twenty-one stitches, seven long, eleven covering, and three tying stitches.

It stops automatically, draws both threads below, and trims them close to the under side of the material. It is very rapid and being automatic, can be rapidly learnt and easily handled by a young girl.

Illustration No. 11 depicts the buttonhole bar-tacking machine, while illustration No. A14 shows barred end buttonholes.

SEWING ON BUTTONS.

The sewing on of buttons by machine is an operation that at one time, and not so very long ago, would have been looked upon as bordering on the impossible ; yet to-day in every well-organised clothing factory several of these marvellous machines are installed. The one portrayed (No. 12) makes a specified number of stitches for attaching the buttons, always including three fastening or tying stitches. The machine is extremely rapid, and fastens on the buttons very strongly. The top thread is automatically drawn below, and the trimming device cuts both threads close to the underside of the fabric. Waste of thread is thus avoided. The machine handles satisfactorily two-hole, four-hole, and bar buttons respectively with great rapidity, the average output being eight to ten buttons per minute.

The action of the machine is simple, and a young girl readily learns to work it. Various kinds of buttons attached to cloth by this machine are shown by illustration No. A15.

BAR TACKING, ETC.

Illustration No. 13 depicts a bar-tacking machine of the greatest service where quantities of work are turned out. It is especially adapted for barring pockets and vents, but it is also found useful for attaching the loop or hanger, and for making imitation buttonholes on cuffs. Its use for trouser work will be indicated later on under the section dealing with trousers.

The machine is entirely automatic in action, and very rapid. It draws the top

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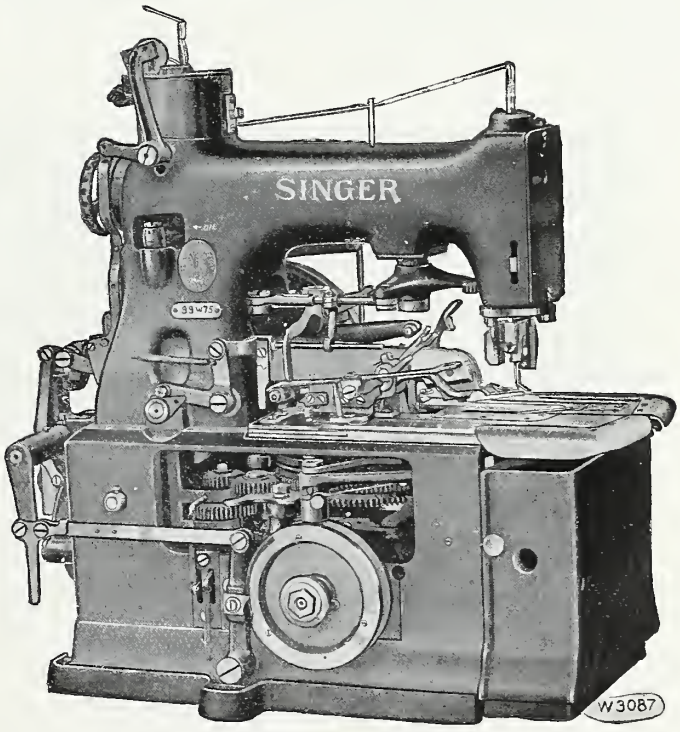
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10.

thread below, and automatically trims both threads at the completion of each bar tack, close to the underside of the material. It makes a very firm, strong and neat bar tack, made up of staying, covering, and tying stitches. The bar tack can be varied from five-sixteenths to five-eighths of an inch in length at the will of the operator, while another machine supplied by the Singer Sewing Machine Co., Ltd., can make bar tacks up to seven-eighths of an inch long. Illustration No. A16 shows the tacking of a loop or hanger, No. A17 imitation buttonholes, also tacking the cuff vent, No. A18 bar tacking a pocket, and No. A19 the tacking of a vent.

The final operation in the making of a jacket in the wholesale trade, and so far as machine work is concerned, consists of sewing on the ticket, but as tickets are also sewn on to vests and trousers we shall leave mention of the ticket sewing on machines till later on.

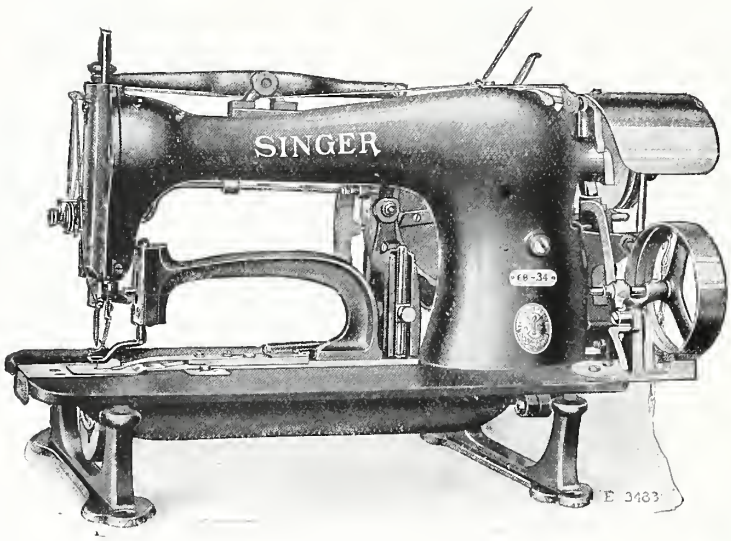
Having thus disposed of the making of a jacket, the next series will deal with the making of a vest by sewing machines in a similar manner, but omitting photographs of the machines already given.

VEST MAKING.

As in the case of jackets, the machine used for piecing up the outsides of vests is the one illustrated No. 1, while the same remark applies to piecing up the lining and back making.

Illustration No. A20 shows the outsides pieced up with the pockets inserted; No. A21 the fore linings and facings joined, and No. A22 the back and back lining pieced up and the back strap with buckle attached. Illustration A23 shows a vest basted by the same machine already described in jacket basting—see illustration No. 5—and ready for the bagging process. For the bagging the stitching and paring machine—Illustration No. 6—is used, while Illustration No. A24 shows the fore parts of the vest partly bagged. For out basting—preparing the edges for being edge stitched—the same machine referred to in jacket basting (Illustration No. 5) is used, while Illustration No. A25 gives a fair representation of out basting. The stitching of the edges is the next operation, and for this the same machine (Illustration No. 7) as referred to in jacket edge stitching is used, and for illustration of the work see Plate No. A26.

In backing or closing up the back and foreparts of a vest (see Illustration A27), the machine used for the bagging process is the most suitable—the machine is depicted in Illustration No. 6. The paring knife can be thrown out of action while the machine is stitching the sides, and put into use again for stitching and paring round the seye section. This machine can always be



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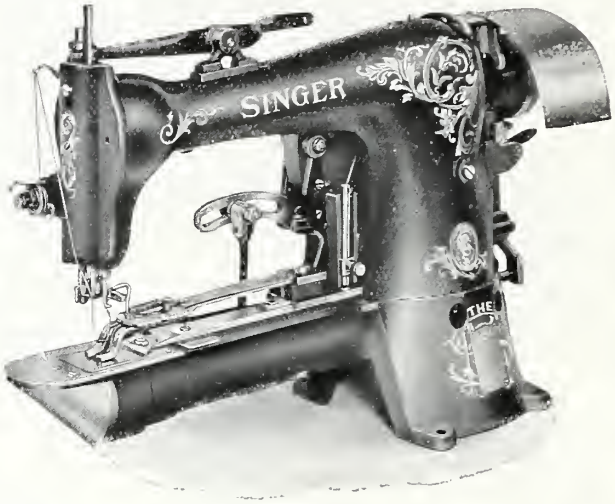

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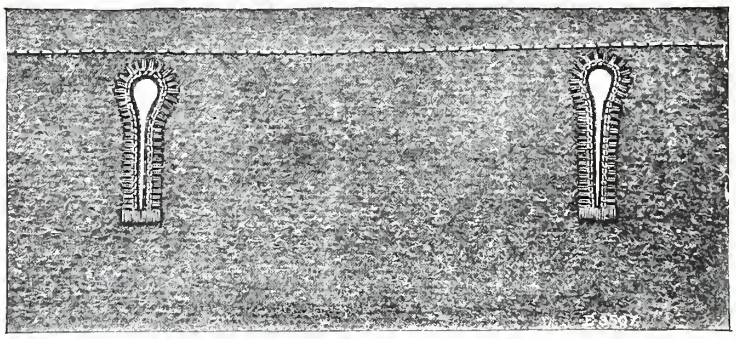

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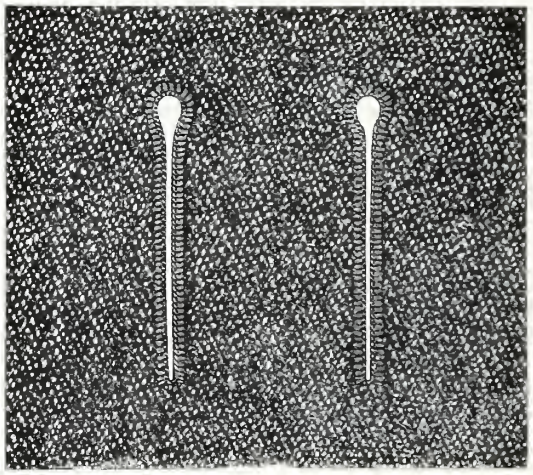

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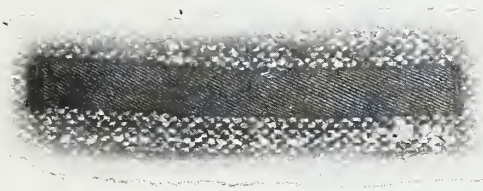

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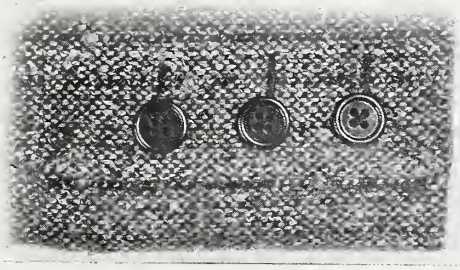

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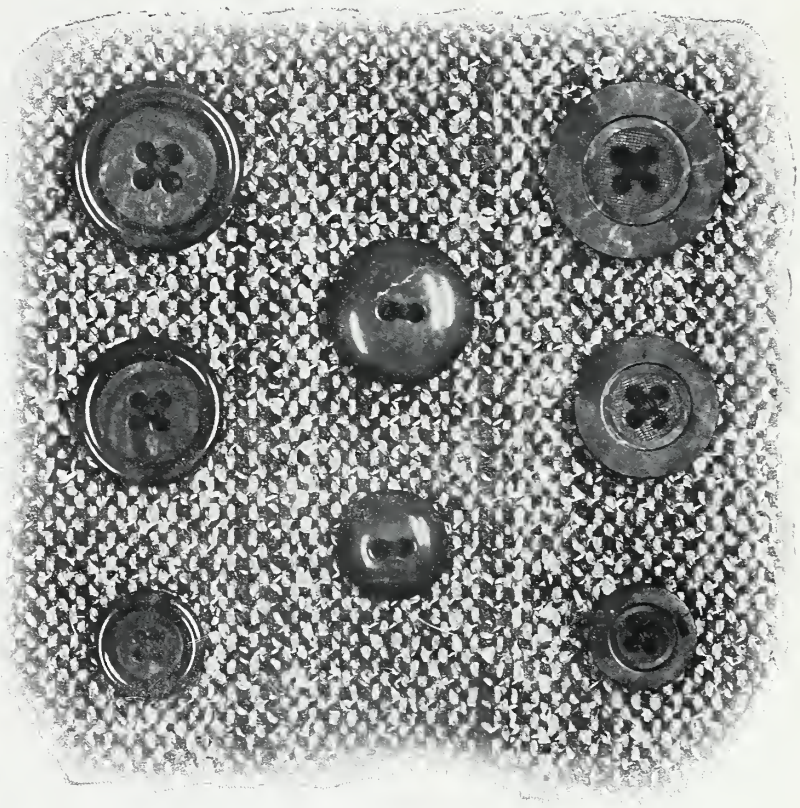

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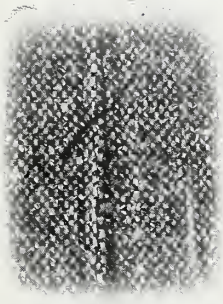

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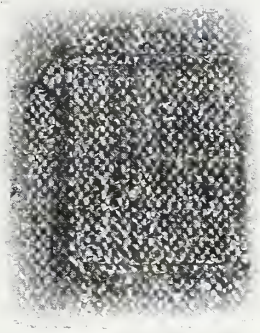

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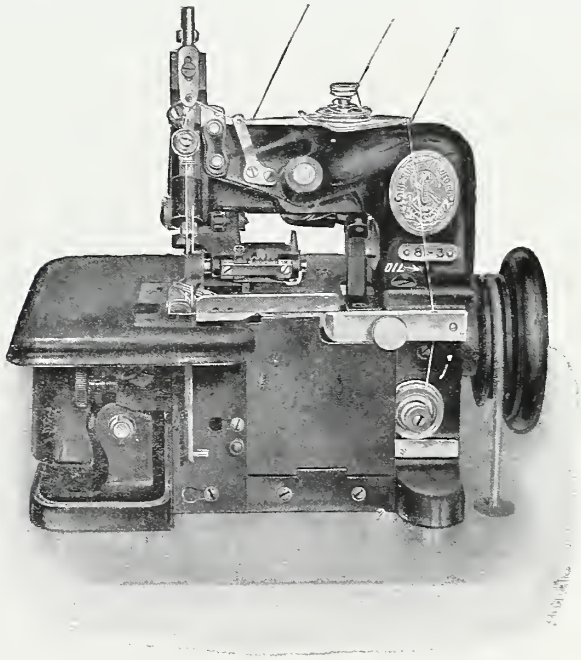

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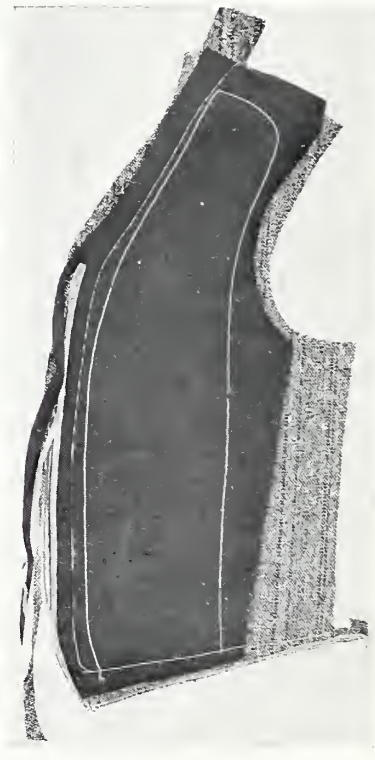
A 20.

A 21.

A 22.

A 23.



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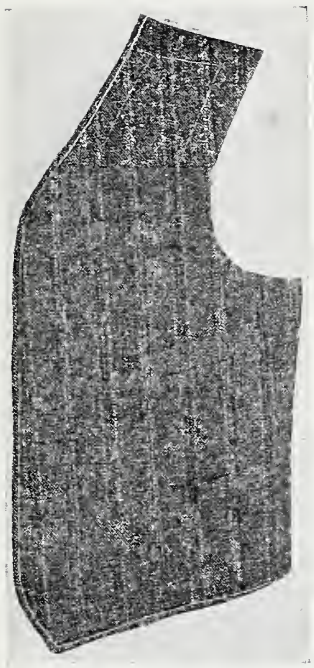


A 26.

A 27.

A 28.

used as an ordinary plain stitching machine when desired.

Illustration No. A28 gives a partial view of a vest turned out after backing.

FINAL OPERATIONS.

The final operations comprise the making of the buttonholes, the same machine as described for jackets is used (see Illustration No. 10).

For bar tacking the button hole ends, the same machine as for the buttonholes in jackets is also used (see Illustrations No. 11 and A14, and description given in the jacket section). For sewing on the buttons the same machine as for jackets is utilised (see Illustrations Nos. 12 and A15), and for the sewing on of tickets the machine will be referred to later on.

TROUSER MAKING.

The machine illustrated (No. 14) successfully and effectively performs the operation known as serging. It makes an elastic over-edge stitch of a zig-zag character, and every stitch taken by the machine is a stitch forward on the garment. The output of this machine is very large, as it runs at the speed of 3,000 stitches per minute. Serging is only necessary on loosely woven materials, and is the overlapping of the raw edges to prevent fraying. (See Illustration No.A29.) The seat and leg seams, together with inside edge of the button hole fly, are the parts so treated.

A 25.

The next operation is performed by machine illustrated (No. 1), which is the same type machine used for the plain stitching processes connected with the making of jackets and vests. In this instance, the pockets are made throughout and the button-hole fly prepared (see Illustrations A30 and A31). The button-hole fly is then passed to the buttonhole operator, while the trouser passes to the next operator to have the pockets inserted, the seat pieces stitched on together with the bands, the back seam closed, silesia stitched on the button fly, and the latter attached to the body of the garment. Plate No. A32 illustrates these processes.

FLY BUTTON HOLES.

For putting buttonholes in the fly a new type of machine is already largely used. It is the machine referred to in connection with the buttonholes in the jacket and vest sections, and as there mentioned illustrated No. 10.

BAR TACKING.

For the tacking of the pockets and the buttonhole fly to the body between the buttonholes, the machine is illustrated (No. 13), and is the same machine described in connection with the bar tacking of the jacket pockets, etc. (see Illustrations A16, A17, A18, and A19, while Plates A33, A34, and A35 depict pocket, fly and binding tacking respectively.

CANVASSING, SEAMING, ETC.

For stitching on the canvas, sewing on the back straps, stitching the buttonhole fly, and sewing the fork and inside leg seams, Machine No. 1 illustration is utilised, and the photograph of trousers (No. A36) shows the result of the operations named.

BUTTON SEWING.

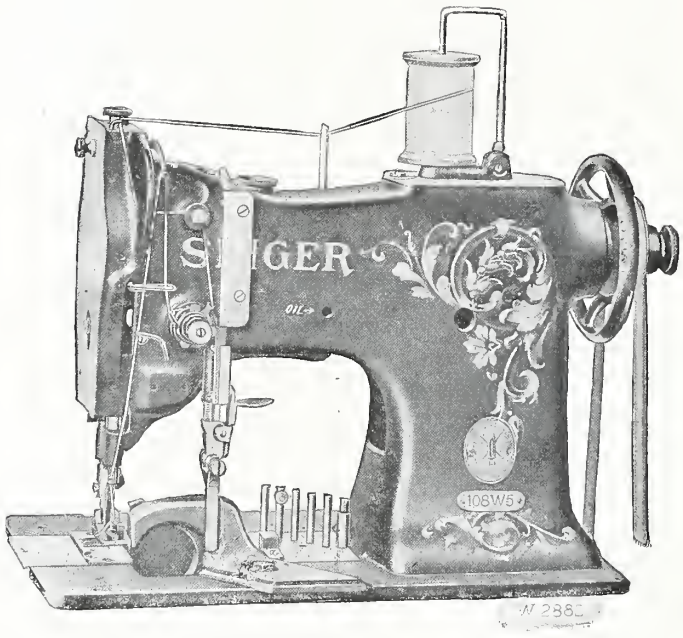
The sewing on of buttons has already been dealt with in connection with the jacket and vests sections. The same machine is used for the trouser buttons (machine Illustration No. 12), and for specimen of the work see Illustration No. A37.

PARING AND BINDING.

The machine illustrated (No. 15) is a new and much improved type of paring machine, and is especially suitable for the binding of trouser tops. The machine is fitted with unison feed mechanism, consisting of a vibrating needle, a vibrating foot, and a bi-motion needle plate, which vibrates flush with the surface of the throat plate, the vibrating movement of all these being always on the line of the seam. In operation, the needle descends through the material into the needle hole in the needle plate, and at the same time the vibrating foot descends on the material, and all move forward together the length of the stitch desired; the lifting foot then descends on the material and holds it firmly, while the needle and vibrating foot rise and with the needle plate, return to position for the next stitch. Another special feature is the trimming knife. It is circular in shape and motion, and trims any material including the lightest quality silesia with perfect ease.

Suitable binders are supplied for different widths of binding.

In certain classes of work the striped silesia is sewn under the binding, but whether sewn under or over—that is the silesia covering the binding along the inside top of the trouser—the machine is equally suitable. This machine undoubtedly effects a marked saving, not only in regard to machine operations, but also in hand work. Plate No. A38 gives a good illustration of the effective way in which the work is executed.



15.

A 38.

FELLING TROUSER BOTTOMS.

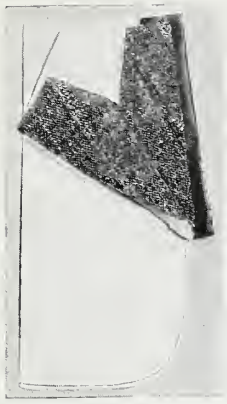
The special machine for felling trouser bottoms is illustrated (No. 16), and it is fitted with a device designed specifically for this operation. The machine is of the zig-zag stitch type, and the special felling device can be adjusted with such delicacy and nicety for blind stitching the felled seam, that the showing of stitches on the right or outside of the material is prevented. Illustration No. A39 gives a specimen of the finished work.

An interesting machine which is used in connection with trouser making is the 14W3 Triple Stitch machine. This machine makes a seam having three stitches to each forward movement of the feed. The triple stitch is extremely difficult to rip, and is very valuable for trouser seat seams.

TICKET SEWING.

All garments—jackets, vests and trousers—are sent forward to customers with tickets attached bearing the measurement figures thereon. It will be at once recognised that to attach these tickets by hand labour where garments are handled in quantities entails considerable cost. A machine for sewing on tickets was therefore introduced by the Singer Sewing Machine Co., Ltd., for the work in question, and with few exceptions is now represented and at work in the clothing factories throughout the country.

Illustration No. 17 represents the machine for ticket sewing. It makes a triangular shaped tack, consisting of thirteen stitches, $\frac{5}{8}$-in. across the base and $\frac{3}{8}$-in. from the apex to the base. It is fitted with thread controlling mechanism, and thread nipping device to hold the end of the thread until



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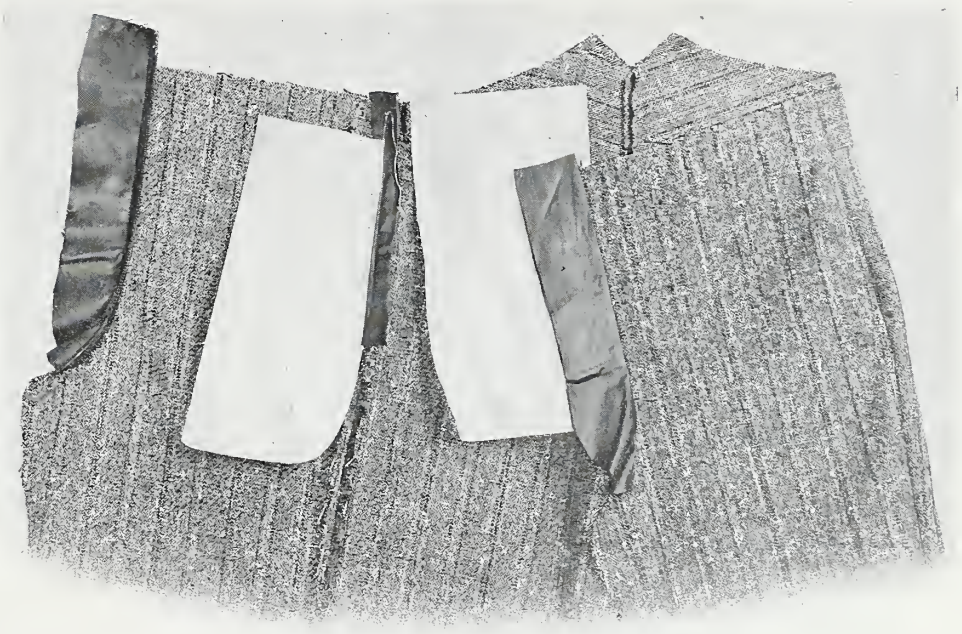

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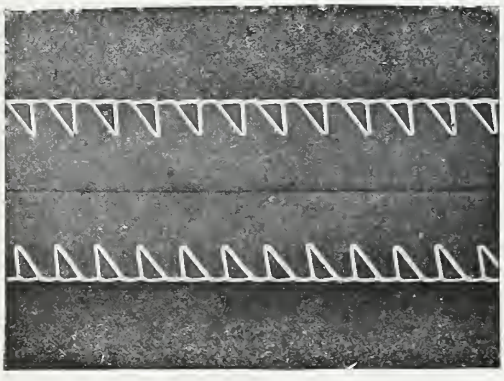
A 31.



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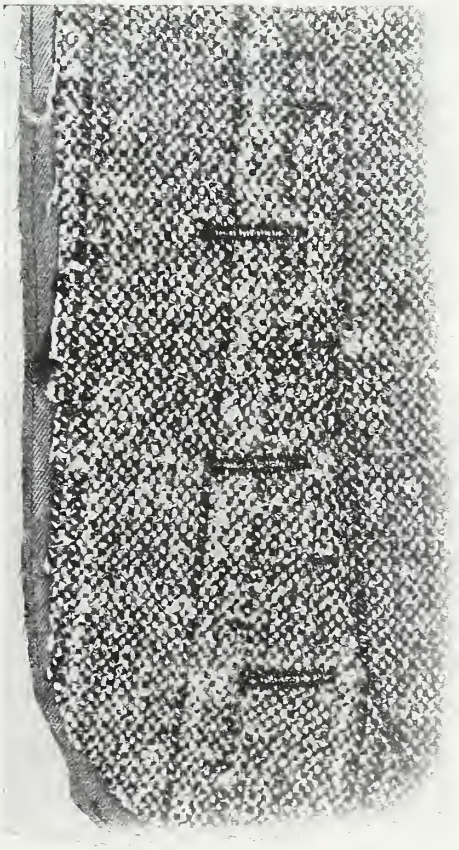

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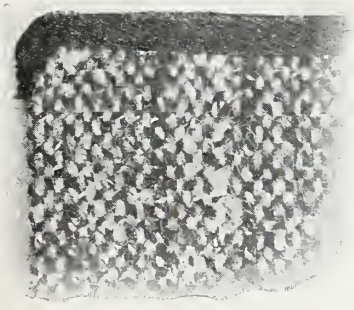


A 35.

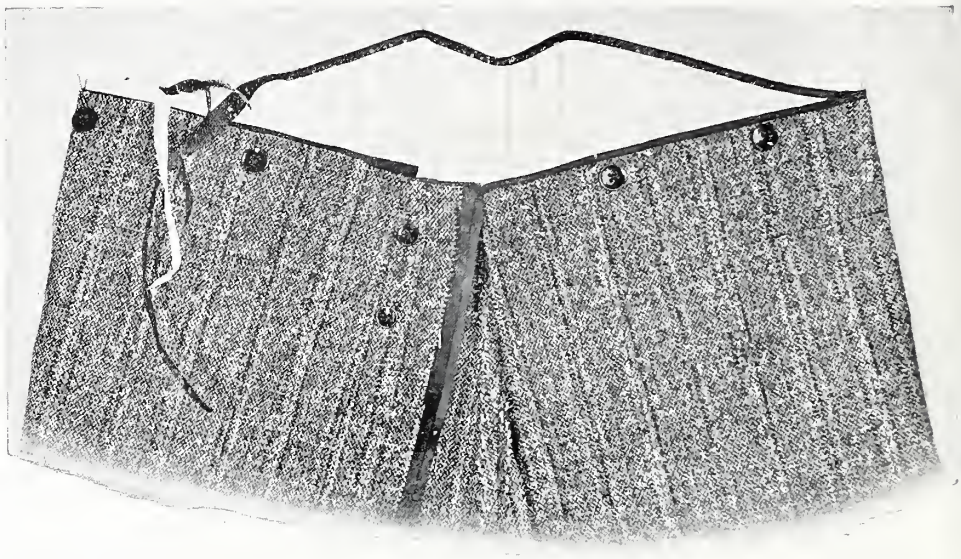
A 33.

the first stitch is made; also a thread cutter arranged to leave a long end. The detaching of the ticket is simplicity itself, for all that is required is to take hold of the above mentioned long thread end and pull, thus the stitches are unravelled and the ticket drops off. See Illustration A40 for specimen of ticket sewing.

The foregoing are only a few of the many sewing machines manufactured by The Singer Sewing Machine Co., Ltd., the exigencies of space precluding any more being mentioned. As a matter of fact, during the great war of 1914-18 the company manufactured quite a number of machines especially for the purpose of making khaki uniforms for soldiers of the British and Allied Armies.

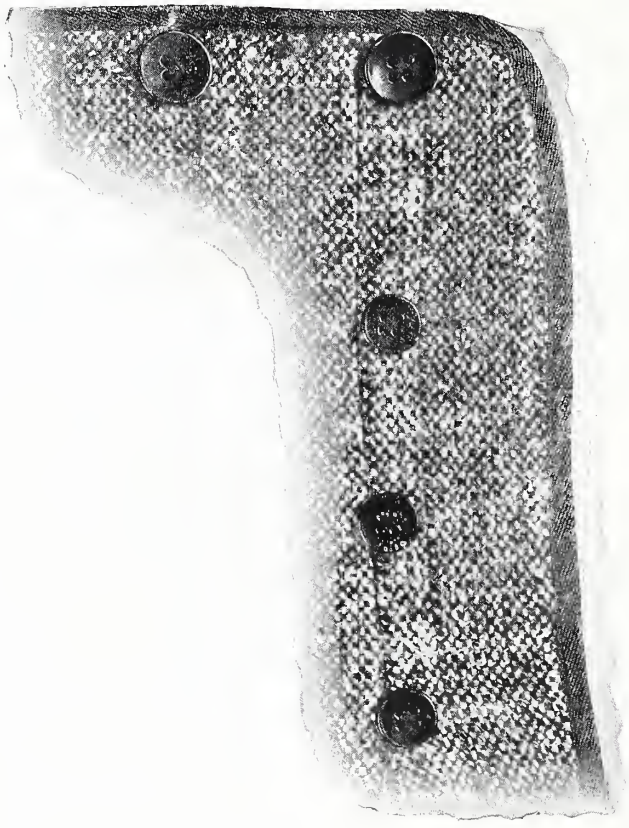
Indeed, it might be said with truth that, but for the sewing machine it would have been absolutely impossible to have equipped and clothed our Armies and those of our Allies in the short time necessary, on the outbreak of hostilities, or to have maintained the continuous supply during the four-and-a-half years the war was waged. This fact alone shows to what extent the sewing machine has become a national asset, and an universal necessity.

As an indication of the extent to which the sewing machine is used in the clothing trade, we append a list issued by The Singer Sewing Machine Co., Ltd., of the principal machines manufactured by them, and the work they perform:



A 36.

Back stitching, barring buttonhole ends, basting, belt making (Norfolk Jackets), binding, paring stitching and binding trouser tops, box-plaiting on Norfolk Jackets, braiding, buckle sewing on; buttonholes; open end, taper bar, straight bar, double-faced, imitating hand hole, parallel to coat edge, on heavy goods, on corduroys, etc., high-speed, juveniles, ditto trouser flies; button sewing (2 and 4-holes) and bar buttons, extra large (shank) sewing on; collar stitching, edge stitching, eyelets, felling coat linings, lap-seam felling, mackintosh stitching, moles and cords stitching, motor coats, multiple needle stitching, oilskins stitching, ornamental stitching, padding collars and lapels (blind stitch), paring and stitching, paring, taping and stitching-edge-seams, piping uniforms, quilting coat linings, stitching rubber goods, seaming (non-drawn), seam staying, serging pockets, serging seams, etc., sleeve inserting, strapping riding breeches, striping military trousers, general stitching, cords and moles, cylindrical or tubular articles, juvenile clothing and light goods, mackintosh or rubber goods, motor coats, waterproofs and oilskins, tacking coat pads, tacking pockets, vents, etc.; tacking loop or hanger, or tacking extra long tacks, ticket tacking, trimming and stitching, triple stitching, trouser bottom blind stitch felling, stitching waterproofs, zig-zag stitching.

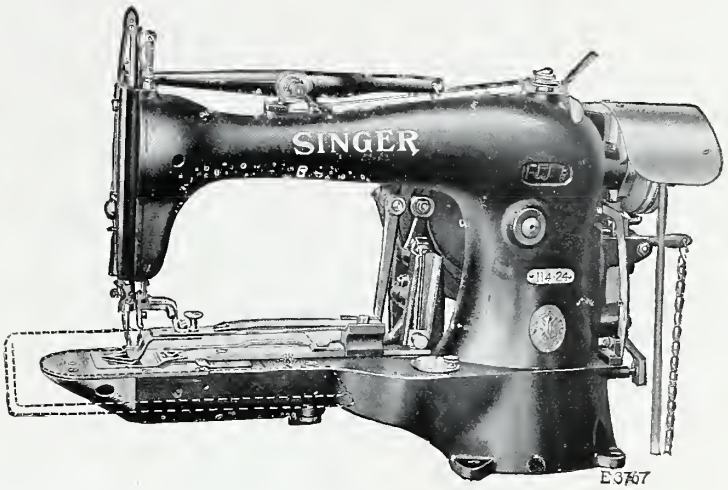


A 37.

* * * *

In addition to the machines enumerated above, Singer Sewing Machine Company, Limited, supply a range of Inter-locking Chain-stitch Machines, but we have not enumerated these machines in detail here, because manufacturers generally prefer the Lock-stitch Machine to any form of Chain-stitch for the regular seaming of clothing.

16.



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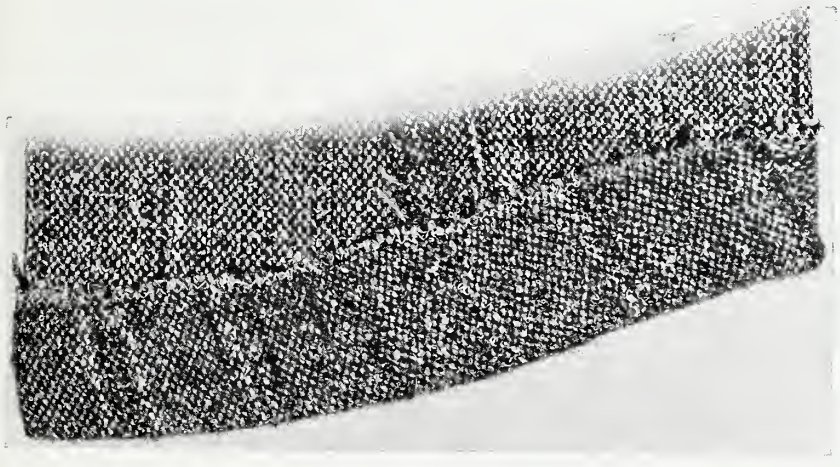

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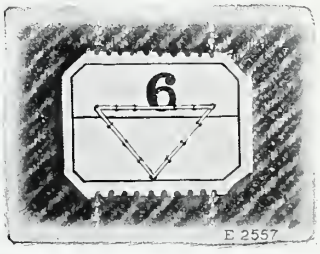
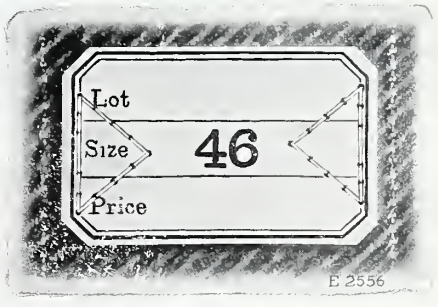




A 40.

WILLCOX AND GIBBS' SEWING MACHINES.

The machines manufactured by the Willcox and Gibbs Sewing Machine Co., 20, Fore Street, London, E.C., are right in the forefront of those used in garment-making, and during the last few years have made a great reputation for themselves. This has been won solely on merit alone, and in competition with all the leading sewing machine firms.

The Willcox and Gibbs high-speed lock-stitch machine, illustration No. 55, is one of the very latest on the market, and has already been installed literally by the thousand in the large wholesale clothing manufactories of the world. Where conditions permit it is capable of 4,000 stitches per minute.

It is claimed that this machine marks a marvellous advance in sewing mechanism. The rotary motion reduces friction to the minimum, while the stitch indicator and oiling arrangements ensure cleanliness and add to the value of the machine's output.

High-speed machines making perfect stitches also enable the operators to do the work expeditiously. Experience has shown that there are great differences in actual value between machines capable of doing perfect sewings continuously at a speed of 4,000 stitches per minute, and those which cannot be safely worked at a speed exceeding 2,000 or even 3,000.

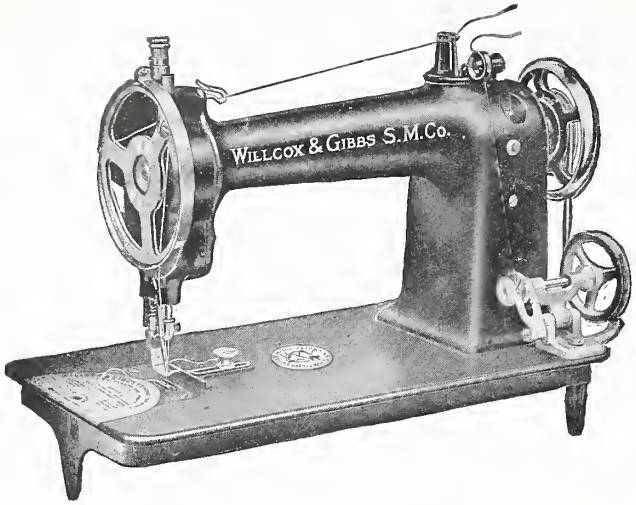
There may be certain portions of work in the making of some garments in which it is thought high speed is not advantageous ; but in the machine under notice the driving arrangements enable an operator to instantly regulate the speed according to requirements.

In this connection it may be pointed out that it takes about the same time for operators to handle and fix the work, whether the machines are working swiftly or slowly, and while the actual sewing is being done it might as well be done quickly.

The "Overlock" sewing machine depicted on No. 56 was invented, patented and introduced by the same firm.

This machine is only used to a limited extent in the tailoring trade, as the work it accomplishes is not in great demand in garment making. In the manufacture of all kinds of hosiery, however, it finds full scope, and is universally used.

It is employed for seaming selvedge goods in which the edges do not curl, but



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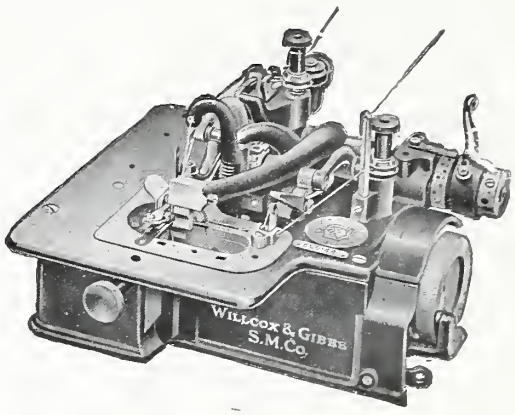

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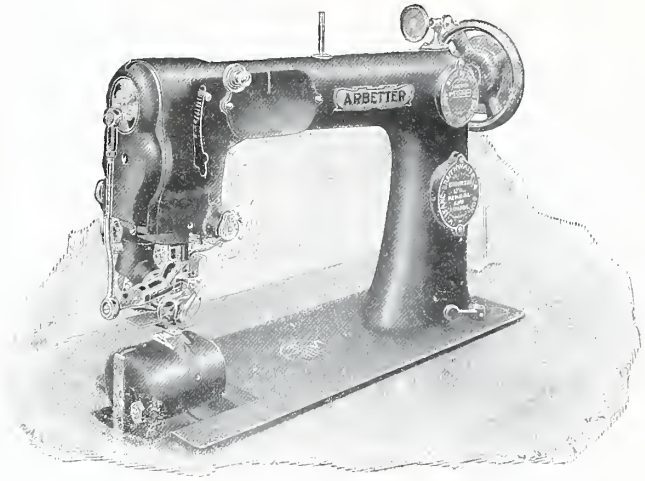

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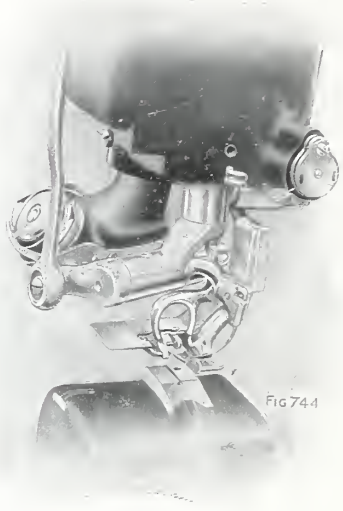

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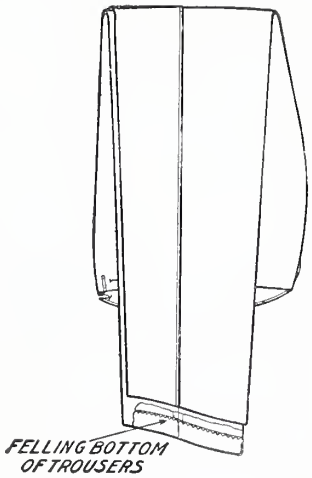

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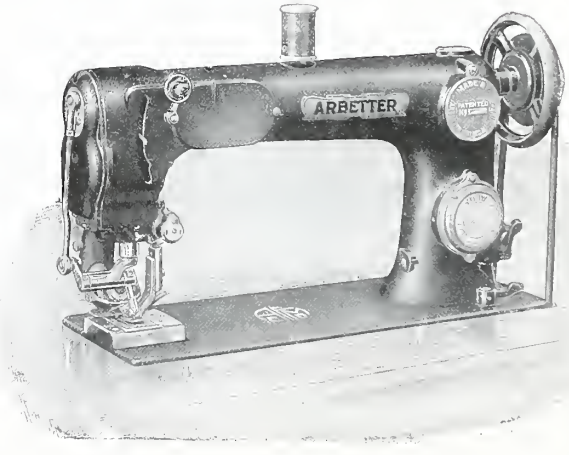

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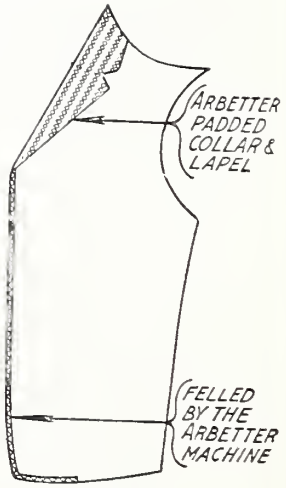


61.

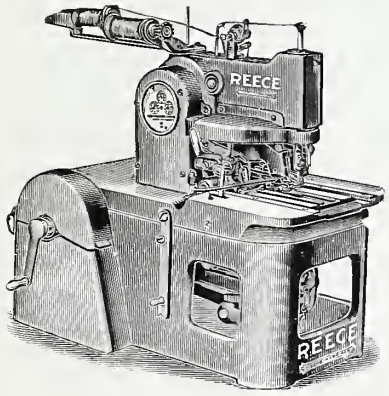
are flat, as in Cardigan jackets, golf-hose tops, etc. It seams, trims and over-edges in one operation, and produces a strong artificial elastic selvedge of neat appearance. It makes 3,000 perfect stitches per minute, with double thread.

THE "ARBETTER" LOCK-STITCH MACHINES.

The above-named machines have a world-wide reputation, and the work performed by them is little short of marvellous.

No. 57 portrays an "Arbetter" lock-stitch felling machine, and 58 gives an enlarged photograph of the foot section, showing the mechanical construction of same.

An illustration of trouser bottom felling is outlined on drawing 59.



62.

These felling machines are made in three distinct types, as follows :

F Type.—For trouser bottoms, facings and bottoms of unlined overcoats, sports' coats, and ladies' unlined coats and skirts, felling of breeches' seams and flat seams generally.

B Type.—For fine felling work, such as linings in ladies' and gentlemen's coats and overcoats, skirt bottoms with taped or bound edges.

XL Type.—With straight stitch, suitable for felling facings and bottoms of overcoats, and sports' coat with bound or taped edges.

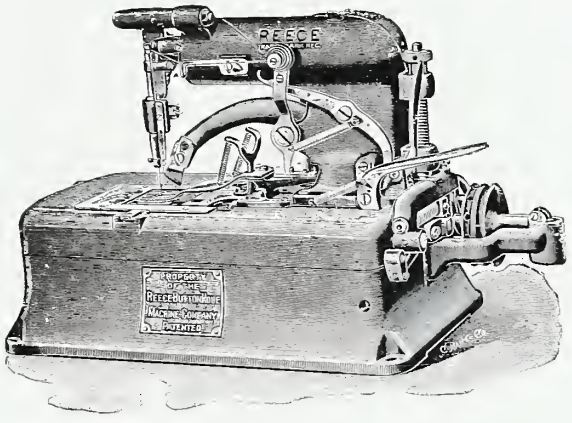
An "Arbetter" lock-stitching padding machine is illustrated on No. 60. This is for padding collars and lapels, taping edges, putting on bridles, haircloth and pocket stays, and all similar work where a blind stitch is essential.

This machine gives perfect collars and lapels, and any degree of "roll" or curl can be obtained. Where it is necessary to attach haircloth or canvas to cloth it proves of the greatest utility.

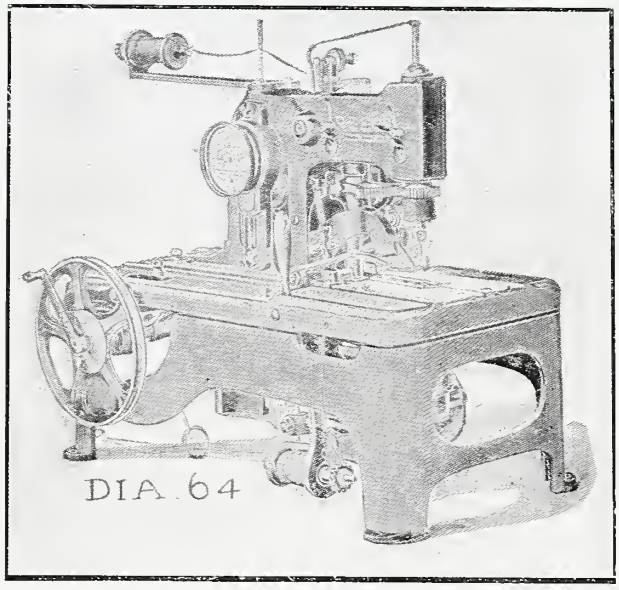
There are two types of these machines, one for the purposes already named, and the other for the felling of crutch linings and fork-stays of trousers.

Diagram No. 61 represents the padded collar and lapel, and also the staytape on edge felled by the "Arbetter" machine.

It might be added these machines are all patents, and sold by Messrs. Isaac Braithwaite and Son, Engineers, Ltd., Kendal, and 200, Upper Thames Street, London, E.C.



63.



THE REECE BUTTONHOLE MACHINES.

BUTTONHOLE MACHINES.

The possibility of making buttonholes by the sewing machine quite early in its history occupied the attention of ingenious-minded sewing machine mechanics, and success at last rewarded their efforts.

At first the holes worked were crude, mis-shapen and unsightly, and did not wear well, and consequently a great deal of prejudice was set up against putting them into any garment but the cheapest class. Even to-day that prejudice has not been entirely eliminated in some trade circles.

There is however, no comparison between the imitation hand-hole of to-day and the machine hole of between thirty and forty years ago or less. The best machines of to-day work a hole that, in shape, surpasses the hand-hole, and equals it in durability in wear, and the saving of labour in the process is, of course, almost incalculable.

THE REECE BUTTONHOLE MACHINES.

The Reece Machinery Company, Limited, 7, Haymarket, Leicester, specialise in buttonhole machines of the latest and best types for use in the tailoring and clothing trades.

These are extensively used both in England and America, and nothing we can say can add to their many merits.

We illustrate herewith one or two

typical machines, the descriptive matter referring to them and explaining exactly what each machine does, being culled from the makers' advertising circulars.

THE REECE RAPID BUTTONHOLE MACHINE.

"This machine (No. 62) is the result of thirty years' experience in manufacturing buttonhole machinery.

"Its superiority over any other machine is in its ability to turn out the highest quality of work ever produced at the minimum amount of cost, thereby making a saving that has never been equalled, and cannot be surpassed by any buttonhole machine that is, or has been placed on the market.

"A few of the many advantages that we claim over any other buttonhole machine are: Speed, Economy, Quality; a perfect barred buttonhole, not an imitation bar, eliminating a separate barring operation; a perfect thread-saving device, eliminating all waste of thread; a machine running equally as well with silk, cotton, or mercerised threads, and does not require a special thread; a machine built to eliminate the wearing of parts; a machine seldom out of adjustment."

THE REECE STRAIGHT-HOLE BUTTONHOLE MACHINE (No. 63).

"This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from $\frac{1}{8}$-in. in length up to 1-in., in shirts, shirtwaists, collars, cuffs, etc., also on kit goods of all kinds. It is superior to all other machines, as it is the only single-thread buttonhole machine on the market, doing away with the bobbin or under-thread, thereby making a great saving in the use of thread, and it will produce more than double the quantity of work of any other machine, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine it is finished in every respect, and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

"The machine is made of hardened steel forgings, thus reducing the breaking and wearing of parts to a minimum."

THE REECE HAND BUTTONHOLE MACHINE (No. 64).

"This machine is superior to any other buttonhole machine on the market, as it makes a perfect hand buttonhole and is very speedy. The buttonhole is stronger, looks better, and wears longer than a hand-made buttonhole. Can be changed to any length buttonhole required instantly. This machine will run equally well with any kind of material, from the thinnest mohair to the heaviest woollen coats. Ravelling is obviated by the fact that the buttonhole is not cut until it has been worked.

"The machine is entirely automatic in all its movements the material being held stationary, the stitching mechanism travelling round the buttonhole. The machine can be easily adjusted to any width bite or gauge without affecting the adjustment of the machine. The needle is self-setting. The high purl on this machine is very desirable, as it makes a perfect imitation hand buttonhole. Any grade of silk or any good cotton can be used without trouble to the operator. When operated with a coarse silk on the bottom it is impossible to distinguish from a hand-made buttonhole.

"The machines are made in the following different types: The Fly or Tacked Machine, which leaves the buttonhole finished. With this machine you should state the size required, but it will make smaller holes without the tack. The machine is used for pant-flys, clothing and underwear and sweater work.

"The Short Travel machine makes button-holes up to 1-in. This is very speedy, but does not tack or finish them. It is used for vests, children's clothing, and all kinds of fabrics which do not require a larger button-hole than 1-in.

"The Medium Travel machine makes a buttonhole up to $1\frac{1}{8}$-ins., and this machine will also make a straight hole without the eye up to 1-in., without cranking the machine around the eye of the buttonhole by hand. This is very desirable for coats, as the lapel buttonhole is usually made without the eye, and when this is required this style of machine should be ordered. It also makes an eyelet end buttonhole up to $1\frac{1}{8}$-ins., and by turning a thumb-screw the operator can get either style required.

"The Regular Travel machine makes any size buttonhole up to $1\frac{1}{2}$-ins.

"The Long Travel machine makes a buttonhole up to 2-ins. This is used extensively on ladies' cloaks and suits, and also in many cases for trimming ladies' garments where the buttonhole is worked but not cut, making a more handsome ornament, and is much more desirable and cheaper than embroidery.

"The machine is simple in all its movements, and is easily operated, and does not get out of repair easily."

SEWING MACHINES USED IN AMERICA.

Having dealt at length with the multitude of sewing machines used in the tailoring and clothing trades of this country, the series would be incomplete without including a few of the leading types in use in America at the present time.

In many cases, of course, exactly the same machine is used on the other side of the Atlantic as here, and in these instances we have not illustrated them again. What, however, we are reproducing is a selection of those machines in general use in American clothing factories, not so well known in England.

LEWIS BLIND-STITCH MACHINES.

The Lewis blind-stitch machines (Diagram 65), made by the Lawrence M. Stein Company, Chicago, in eight different models, for handling certain blind-stitch operations in connection with different classes of materials, have a large following in the clothing trade of America. Briefly, they will satisfactorily do the following work:

1. Padding collars.
2. Padding lapels.
3. Putting bridles on lapels.
4. Putting on edge-stay or tape on coats.
4. Making canvas fronts.
6. Felling coat bottoms, light or heavy goods, piped or raw.
7. Felling sleeve linings at coat cuffs.
8. Felling linings on half-lined coats.
9. Felling facings on unlined coats, straight stitch.
10. Sewing canvas to front facings on plain edge coats.
11. Felling patch pockets.
12. Felling pant bottoms.
13. Bellows edge work.
14. Interlining fur coats.
15. Stoating edges of coats.
16. Felling piped seams in back of coats —hand appearance.
17. Felling stay lining at bottom of sleeve.

It is claimed for these machines that one of them will produce as much as ten hand operators, and that the finished work will be stronger, neater, and more uniform. The daily average of this machine is 500 to 600 pairs of trouser bottoms felled, which it will finish with either covering stitch or straight stitch. It will fell edge stays and bridles on 200 to 250 coats a day, and does perfect work on either light or heavy-weight goods.

The same Company also have on the market a machine called the " American " Edge Worker—Baster (Diagram 66). This new labour-saving machine claims to be different to the ordinary edge-baster. In fact. it is two machines in one, as it works out the edge of sac coats and overcoats so perfectly as to preclude pressing ; and, moreover, the basting stitches can be made the length desired by the operator.

Two more " money-savers " sold by the Lawrence M. Stein Co. are illustrated herewith, viz., the Automatic Thread Twister (Diagram 67), and the American Tape Sewer (Diagram 68).

The first twists the thread used for sewing on buttons in one-tenth the time required by hand, and does it more evenly, The knot on the thread is hooked in the fly-wheel axle. which is set in rapid motion by pressing down the adjoining half-ratchet wheel. Momentum does the work, and in a second's time the thread is twisted as tightly as required.

The Tape Sewer is for sewing tape on the lapels and edges of coats. This machine automatically feeds the tape and guarantees the same fulness on both sides of the coat, making an even and perfect edge. This increases the output fifty per cent., and insures a perfectly balanced garment.

The Frederick Osann Company, New York, have a machine (Diagram 69) for stitching under-collars in one operation. This machine is provided with from 5 to 14 needles, as required, and it is said enables the operator to turn out the same work in two hours which would require nine hours on a single needle machine. Further, the under collar on this machine is sewed with an elastic stitch, making the collar more pliable, and the saving in time and labour is very considerable. Diagram 70 shows the finished work.

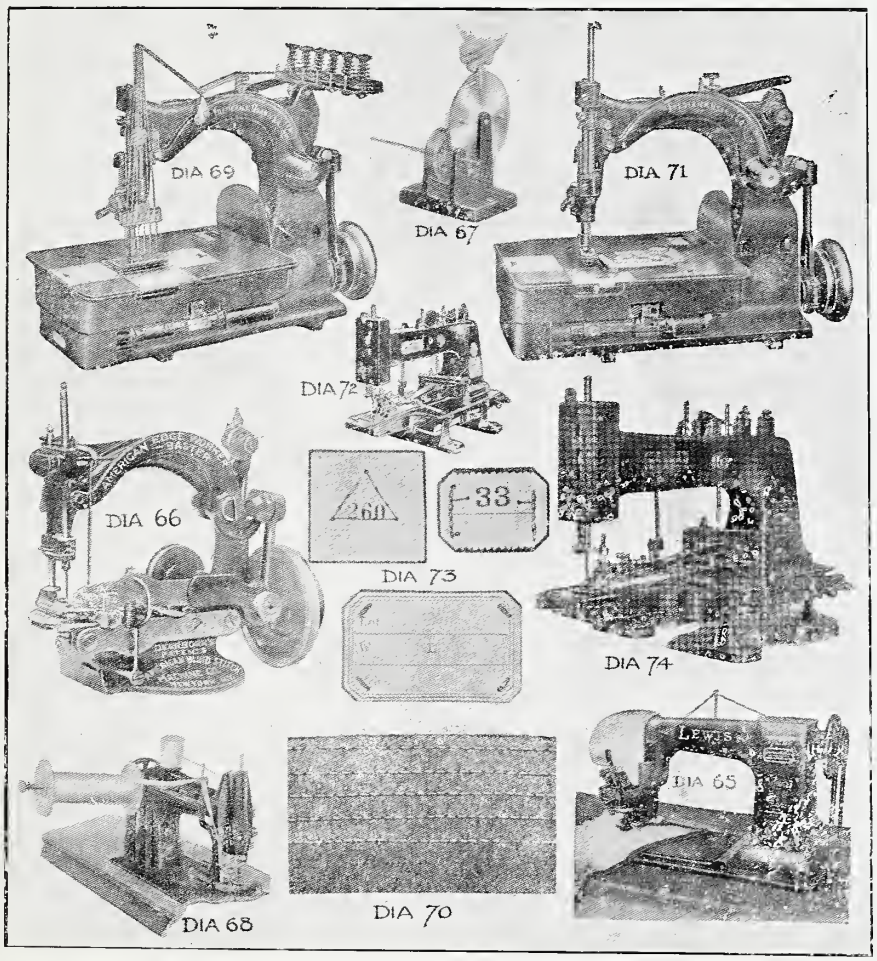


Diagram 71 illustrates a machine for basting sold by the same people. This machine is simple in construction, will operate successfully on light, medium, or heavy garments, and is a great labour-saver.

The Union Ticket Sewing Machine is a single chain-stitch machine manufactured by the Osann Co. (see Diagram 72). This sews on tickets so that they will hold, yet can be removed instantly if necessary, and without the least injury to the garment. It is made in three types, viz., corner tacking type, triangular stitch type, and parallel stitch type, and Diagram 73 shows the effective way this machine does the work in each instance.

A machine for sewing on buttons (Diagram 74) is another ingenious labour-saving device of this go-ahead Company. This attaches buttons neatly and strongly on all kinds of garments, and is readily adjusted to all sizes of buttons.

Plate 75 depicts the Union Special Edge Basting Machine sold by the Union Special Machine Company, of New York, Chicago, Cincinnati, St. Louis, Philadelphia, and San Francisco.

With this machine the edges are basted with a single chain-stitch easily ravelled back. It gives a uniformity of edges after basting. A large increase in production at a greatly reduced cost is claimed by its use.

The Union firm also run a machine for felling coat collars, which closely resembles hand-work when the operation is completed.

The accompanying illustration (Plate 76) gives a specimen of the felling accomplished by this machine.

Another ingenious little contrivance from the other side of the herring-pond, for saving silk, cotton or thread, is worth mentioning. The annoyance and waste of cotton, through it getting loose on the bobbin, and slipping off and becoming tangled on the iron pin, is the experience of most sewing machinists, and this device, called the " Never Tangle " prevents this. It consists of a small plate placed at the bottom of the bobbin, which revolves with it. As the " Never Tangle " costs but a few coppers, its sale should be a large one.

Diagrams 77 and 78 give a good example of the annoyance obviated and economy practised by using this little invention.

THE AMERICAN BLIND-STITCH MACHINE.

The American Blind Stitch Machine Co., New York, manufacture an improved blind-stitch machine for padding lapels and collars and coat fronts, which has been largely adopted by tailors and clothing manufacturers in this country.

This novel and distinctive type of machine, No. 79, was patented in 1899, and in 1901 and 1902 this patent was followed by three others for improvements thereon.

In March, 1906, three new patents were issued to the inventor for an improved blind-stitch machine, and machines were sold embodying such improvements. Still further improvements have been added,

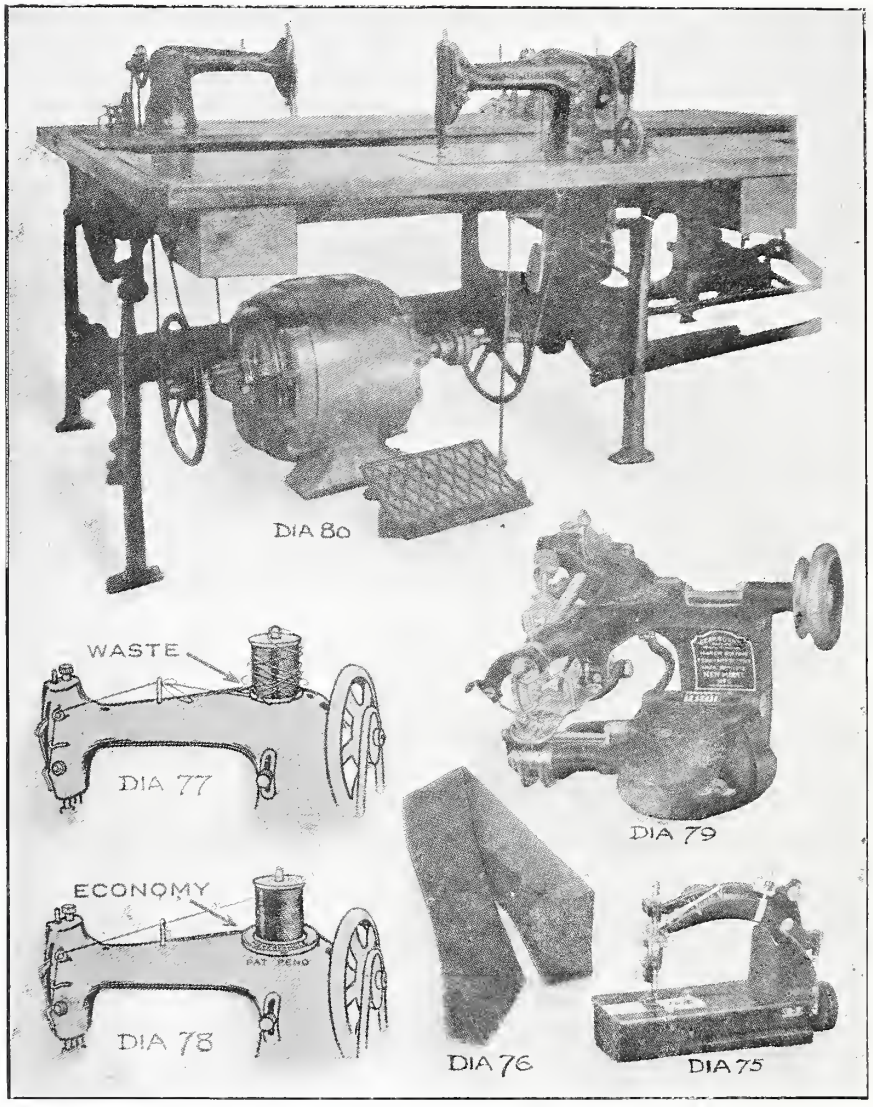
until the machine has reached its present state of perfection.

In reality there are two different machines, one for padding lapels and collars, and the other for padding coat and jacket fronts, etc.

We have recently had the opportunity of inspecting samples of work turned out by these American Blind-Stitch Machines, and must confess we never imagined anything approaching such admirable work was possible for machinery. The stitching is exceptionally neat, even and regular, and, what is more, the necessary roll desired in collars and lapels is, at the same time, imparted to the work. The same uniformity and regularity of stitching on the canvas coat fronts examined is observable, the same neatness and satisfactory workmanship. We do not wonder in the least at the large sales this machine has experienced.

We understand the American Blind-Stitch Machine is simple in construction, easy to work, and will do either light or heavy work with equal facility.

Finally, Plate 80 shows how the electric motor is utilised for driving sewing machines in large garment factories. The motor is small and compact, quite out of the way, and does not impede the work of the machinist, and no space is wasted in fixing it. It is reliable, efficient, smooth working and clean. The cost of working is comparatively low, it rarely gets out of order, and, consequently, the repairing bill is insignificant.



THE ROYAL ARMY CLOTHING FACTORY.

This part of the book would be incomplete were not some reference made to the extent to which the sewing machine is used in the large clothing factories in this and other countries.

The photographic reproduction herewith is of the Royal Army Clothing Factory, Pimlico, London, which has been appropriately styled, respectively, "a palace of industry," and "the finest factory in England."

A brief description of same may not be out of place here, and will afford an agreeable diversion.

This huge building, standing on the edge of, and overlooking the Thames, altogether belies its designation of "factory," as is usually associated with that name, for externally it resembles a large hall, or pompous private residence, while internally it has the appearance of a palace.

The main hall of the building is an immense room, 200-ft. long by 34-ft. wide, and 50-ft. high, with a massive glass dome roof, and surrounded by a wide balcony on all sides.

In this huge room, nearly seventy yards long, and in the balconies above, most of the 1,150 female employees perform their daily task. For in the various processes necessary to the making of garments for our Army, female labour is mostly employed.

To see this vast army of females working merrily away, all cheek by jowl under one roof, is a sight not easily forgotten. The variegated colours of the workers' dresses, and the multi-coloured garments and trimmings they are working upon, presents a kaleidoscopic effect that is quite fascinating to the onlooker.

In this factory all the very latest and most up-to-date labour-saving devices and machinery have been adopted, and young women are engaged in putting buttons on trousers by the aid of a sewing machine with lightning-like speed; while others are working buttonhole machines that cut, make and work the holes with almost equal facility.

On the floor of this main hall from 400 to 500 females perform their work, either at sewing machines or hand-sewing.

THE SEWING MACHINES.

The sewing machines are arranged between the tables, and to each machine are eight what are termed "sewers," i.e., hand-sewers, nine in each squad—to use a term appropriate to the military atmosphere prevalent—and this principle is practically adhered to in all departments.

It should be understood that nothing but military garments are made in the Army Clothing Factory, while every kind of outer garment of clothing worn by Tommy Atkins is made there.

Under the side gallery on the left another 200 or more females are similarly engaged to their near neighbours. Here, there and everywhere are military garments of all kinds and for every branch of the service: red coats, drab tunics, khaki colour, grey flannel for shirts, etc., abound on every hand. At one machine a woman puts red stripes down the sideseams of trousers, with much more accuracy, we are informed, than could ever be done by hand, apart from the greatly enhanced speed.

Farther on, in another room on the same floor, females are busily engaged pressing off trousers by machine. One machine presses the whole of one side of the leg in one operation, while another does the same with the tops or body portion, disposing of them most expeditiously and effectively.

ROYAL ARMY CLOTHING FACTORY, PIMLICO, LONDON.

CUTTING CHEVRONS.

In a small cutting-room upstairs a man cuts chevrons, collars, and other of the smaller sections of the garments, with a short-handled knife, resembling in shape a miniature cheese-cutter. Shoulder-straps, yellow, blue, white and green facings, etc., are cut in thicknesses of ten, and the patterns of same are made of brass, hundreds of which hang on nails all round the room. In another room adjoining girls put up the necessary trimmings, fittings, etc., to the garments, tying them up in pairs, after which they are handed on to the supervisors.

The cutting-rooms extend for some distance on either side of the galleries or balcony, and the cutting-boards measure about twenty-five yards long, and are sufficiently wide to allow of two widths of cloth being placed thereon, the cutters thus facing each other when at work.

The making-up of chevrons and the putting of gold lace on cuffs, etc., forms the occupation of quite a number of females. As machines are only used occasionally for this work, treadle sewing machines are employed. State garments are also made in this department, and the workers are highly skilled and well trained, and years of experience and practice are necessary to attain the degree of speed and proficiency required for handling such habiliment.

In still another room workers put yellow cord on Hussar tunics, again extremely particular work, and the same may be said of the making of Highland kilts, all of which necessitates long and careful training.

A repairing department is also in full working order, and when garments are returned for alterations or repairs, a staff of females rip them open while tailors do the necessary skilled work.

With all this, the comfort and happiness of the workers have by no means been neglected. The windows all round are provided with sun blinds to protect the workers during the hot weather, and drinking taps or fountains with cups, are provided here and there at the sides of the building. Moreover, a large, comfortable mess or dining-room, beautifully clean and tidy, adjoins the main hall, where meals may be taken in appropriate surroundings.

The hours of labour are by no means excessive, viz., from 8 am., to 6 p.m., with one hour for meals.

On Saturdays the time for leaving off is 12.15, and although there are over 1,300 employees to receive their wages after that time, the system is so perfect that by 12.45 everyone has received his or her wages, and are off the premises.

All the workers seem happy and contented, and, compared with some of the unhealthy, stuffy places used as workrooms, this factory is a paradise.

Built especially for the purpose for which it is used, the Royal Army Clothing Factory has been said to be the healthiest and best-adapted manufactory in the world; and he would be a bold person to challenge the statement.

5,000 SEWING MACHINES.

Of course, there are factories utilising many more sewing machines than the one just referred to—considerably more. One gigantic concern, staffed and equipped

specially for war work, had no less than 5,000 Singer sewing machines installed and working.

Messrs. Schneiders and Son, wholesale and export clothiers, of Durward Street, and Bedford Street, London, E., at the latter factory alone had, during the war, 1,500 sewing machines all on khaki work.

Another well-known firm of Government, railway, police, tramway and fire brigade uniform contractors, Messrs. H. Lotery and Co., of St. Mary Street, London, E., had six large factories in full working order, and at the one given in the above address, 1,000 machines are installed. And so we might proceed giving lists of names of firms of note who use sewing machines by the hundred, if not by the thousand; but as no useful purpose would thereby be served, we refrain.

We have now reached the end of Part I. of this treatise—and think enough has been written and ocularly demonstrated by means of the numerous plates and drawings, to show the utility of the sewing machine for practically every purpose in the tailoring trade.

Its universal adoption is in itself overt proof of its efficiency, and the high state of perfection it has reached, and the beautiful and useful work it is capable of in the hands of skilled workers would disarm the criticism of even the most prejudiced, if viewed with unbiased judgment.

(End of Part I.)

PART II.

PRACTICAL GARMENT MAKING BY THE MACHINE.

Having disposed of the historical and theoretical considerations of our subject, we purpose devoting the remaining chapters to the practical application of the sewing machine in the actual making of the garments.

To do this by means of the printed word and explanatory diagrams and drawings is not an easy matter ; but, we believe, in the following chapters we have overcome most of the difficulties and drawbacks incidental to this method of tuition.

Nowadays most of the arts and sciences may be acquired and mastered through the medium of books, and the art and science of working the sewing machine is no exception to the rule, therefore we proceed with our subject with the assurance that our object will be fully achieved. That object briefly is indicating and outlining the possibilities of the sewing machine to modern methods of garment making.

It goes without saying that the sewing machine is now used in the making of the highest and best class of garments, as well as the lowest, and, what is more to the purpose, it answers equally well in both cases. We doubt, however, whether the trade generally at the present time gets the best and fullest results out of this mechanical device. The reason of this lies in the fact that hitherto, in resorting to the use of the sewing machine, quantity rather than quality of sewing has been the aim and object—the great desideratum, the be-all and end-all of its being requisitioned.

Moreover, although the sewing machine is now universally used, scientifically, we make bold to say it is little understood by machinists or its operatives. Accordingly, the first thing for the machinist to learn is the construction and capabilities of the machine itself, and then to strive to produce results similar to hand-sewing. That this is possible is beyond question, as we hope to demonstrate before we have finished. The sewing machine has, in fact, been so improved and perfected that almost anything is now possible ; it only requires on the part of the operator, a knowledge of how to manipulate his or her instrument.

By this we do not wish to infer that the machinist should understand machine construction ; but it is essential that he or she should have intimate knowledge of those parts of the sewing machine that form and regulate the stitch. This is the first principle of garment making, and, if not comprehended, no matter how accurately the garment may have been put together, the result of the indifferent sewing will be plainly apparent. The first lesson the youthful apprentice to hand-made tailoring receives is correct formation of the stitches. The same should apply to the sewing machine worker. The machine will do much, but not everything ; an intelligent machinist is a *sine qua non* of good workmanship.

Experience and observation go to show that a number of machinists pay little attention to the important matter of how to use the sewing machine. It is the object of this book to enlighten all such upon this fundamental error, and so try and remedy the defect, and thus bring about a better standard of machine work.

This necessitates, first of all, a more intimate knowledge of the sewing machine than has hitherto been deemed essential, a closer bond between machinist and machine than usually exists ; in other words, a perfect knowledge and understanding as to what is possible.

With all the information that will be imparted, and the counsel and instruction laid down, accompanied by the numerous illustrations, all acting as guides and mentors, it should be possible for all to produce well-fitting garments with the aid of the modern sewing machine.

AN ART AND A SCIENCE.

As we proceed we hope to convince the prospective machinist of the necessity of applying himself diligently to his business, if he wishes to become master of it ; and also show the machinist who thinks himself fully competent, that he has yet something to learn.

Working a sewing machine is not quite so simple a matter as many imagine—not, at any rate, to operate it efficiently. It means something more than merely guiding the work as it passes under the needle ; it means manipulating the garment being made, just as the hand-sewer " humours " his work. Just as the latter guides his needle with his fingers, the machine-sewer guides his with his legs. This may sound somewhat paradoxical, but it is nevertheless perfectly true.

The art and science of working the sewing machine has been often imperfectly acquired, and taught by those whose knowledge of the subject was only equalled by their ignorance of their failing. To recognise one's limitations is as important as to know one's capabilities, but to how many has the former been denied ?

In commencing the study of any subject, or the acquirement of any art or science, it is customary to begin with the simple and elementary, and proceed by gradual stages to the more advanced, complex and difficult. This principle will be followed in the present instance. The youthful aspirant to expertness in working the sewing machine will not, at the beginning, have his mind burdened with too many details, or confused by resorting unduly to technical terms when they can be avoided.

The object aimed at is to instil into the mind of the prospective machinist a desire for " more light " on this subject, and so assist him to become fully competent at his calling. At present there exists no recognised or properly equipped institution for imparting this knowledge, or supplying the necessary training, hence our attempt to supply the deficiency by this lengthy illustrated treatise.

PROPER TUITION ESSENTIAL.

It may be contended that every workshop or factory where the sewing machine is used is a " properly equipped institution," but such is far from being the case.

In many instances no attempt whatever is made at proper tuition, and the learner thus acquires a very imperfect knowledge of what he and his machine might do.

In some Continental countries, we understand, it is customary when an apprentice to the tailoring trade has finished his apprenticeship, for him to undergo an examination at the hands of State officials in order to test the extent of his knowledge. Should he not come up to the standard required his employer is prosecuted for failing to properly teach the youth his craft.

If this method were pursued in the tailoring trade in this country we are afraid quite a host of employers would be haled before the powers that be ; but it would make for greater efficiency all round.

The Trade Boards Act compels employers to pay a standard rate of wages ; it ought to go further, and enforce a standard of tuition that will ensure a body of efficient skilled workers.

It is calculated that at least two-thirds of the sewing in a tailor-made garment is done by the sewing machine. The rate of speed, as we have seen, is anything from 2,000 to 4,000 stitches a minute. The object of the machinist is to try and make these lightning-formed stitches equal to handwork.

When careless or incompetent machinists have had their attention called to their bad workmanship they have perhaps exclaimed "Oh! that is a mere matter of detail!"

Exactly! but it is just that attention to detail which tells, and makes all the difference in the appearance of the finished garment.

THE SEWING MACHINE DISSECTED.

The illustrations of the various parts of the sewing machine represent those that are in constant use in the actual process of sewing. Of course, all the other parts of the sewing machine not represented are in constant use, but those parts illustrated are the particular ones the machinist should become acquainted with. These regulate the work in the process of sewing, and, as far as the machinist is concerned, are the important sections of machine construction.

The details and description of the function of these parts should be understood and closely followed by the student, so as to impress it upon the memory, the need for which will become more apparent when the more advanced stages of garment making are reached.

Two things are required to complete the outfit of every machinist, viz., a large and a small screwdriver; these, however, go with every machine at the time of purchase. Like everything else, there is a time to use these tools and a time not to use them. Moreover, there are proper parts upon which they should be used, and other parts of the machine upon which they should not be used.

It may seem irrelevant to mention so apparently trivial a matter, but when one sees the mischievous manner in which some machinists manipulate the large screwdriver upon parts of the machine that do not concern them, thereby throwing the bearings and whole mechanism out of gear, resulting in bad sewing, the counsel may not, after all, appear so inapplicable.

When a sewing machine loses its bearings, as it sometimes does, it is advisable to send for the mechanic to attend to it at once. For the machinist to tinker with it is usually not only a waste of time, but also a waste of money, as in the end the mechanic has to be called in to adjust matters.

The setting of a new needle when the old one breaks, or the removing of the needle-plate (Diagram 8) to clean the fluff accumulated between the drop feed (Diagram 7) will not put the machine bearings out of gear, and may be safely done.

In order to explain how to produce garments with the aid of the sewing machine it is imperative that some type or make of machine must be used upon which to base our remarks. That being so, we have selected for this purpose perhaps the best known and most popular sewing machine in use in tailors' workshops all over the world, one acknowledged by expert machinists as durable and reliable for all purposes of garment making.

The accompanying diagrams represent the various parts of a Singer sewing machine of modern construction, such as is in general use to-day.

Before any attempt is made to operate the machine the prospective machinist should make himself well acquainted with those parts employed in forming the stitch, and to know how and when to regulate them. To the uninitiated some of these sections may appear to play quite a small part in the forming of a perfect stitch, and are hardly worth notice; but in the mechanism of a sewing machine nothing is trivial or unimportant.

Taking the last illustration first, Diagram 13, this represents the treadle worked by foot power. The right foot should be placed on point (a) and the left foot on point (b). Attached to the treadle is a rod, which connects what is known as the fly-wheel. In the groove of this fly-wheel is placed the strap or belt which connects the small wheel to the head of the machine, as shown on Diagram 1.

The needle, although a fixture in the needle-bar, is guided from point (a) of the machine treadle. This important factor is often overlooked, with the inevitable result of loose and slipped stitches. Why is this so? Because the proper treadling of the machine has been neglected. As a matter of fact the first thing the machinist should acquire is the art or skill of correctly propelling the needle-bar, technically known as "timing."

It sometimes happens that while the machinist is treadling, the strap of the fly-wheel will revolve without turning the wheel, thus causing a faulty stitch in the middle of the seam. To obviate this, both feet should be firm on the treadle when working, in order to prevent the strap from slackening. Constant practice gives the operator the facility for keeping the feet in position.

Once more we emphasise the necessity of mastering the art of treadling, without which no one can ever hope to become an expert machinist. It is in the intricate parts of putting in welts and pockets, and making bound work by machine, where the knowledge of "timing" is required.

In large clothing factories it is the custom to put the learner straight away to a power-driven machine; this, we contend, is a mistake. Our contention is that no person should be placed on a power-driven machine without first having had at least twelve months' training and experience with a foot-treadle. It is on a power-driven machine where the knowledge of timing is most required, as only one foot is used to touch the treadle to connect the driving-shaft.

In every factory where the sewing machines are driven by power there should be also a number of foot-treadle machines for the training of learners.

REGULATING THE TENSION.

The next matter of importance is the making of the perfect stitch. The machine in itself contains the possibilities, but knowledge is necessary on the part of the worker. Two parts combined go to form this stitch, viz., the top and bottom tension.

Reference to Diagram 1 will show at point (b) there is a round knob that is the top tension. If turned towards the left, the tension through which the cotton passes is loosened; if towards the right, it is tightened.

On Diagram 4, at point (a), a small screw will be observed on the bobbin case. If this is turned to the left with a small screwdriver the cotton becomes loosened; if towards the right it is tightened.

Now in order to produce a proper stitch, the relative positions of these two tensions should be such that the cotton, silk, or thread passing through the needle should do so with the same ease as it passes through the tension spring of the bobbin case. This spring will be observed on Diagram 3, next to the tongue, point (b).

Neither the top nor bottom cotton or silk should jerk in passing through the tension, but go through smoothly and evenly. It is somewhat difficult to explain in words how to gauge the regulation tension. We will try, however, to make it clear.

In order to arrive at the standard of looseness or tautness of stitch required, a beginning should be made by sewing a seam on a waste piece of cloth, and if the stitch is too loose the top and bottom tensions should be tightened until the correct stitch is obtained. The way to test the stitch is by opening the material, and noticing if any cotton is visible on the right side. If it does show, give the tensions another turn until the desired result is secured.

In order to prove that the tensions are not too tight, and that the seam will not give under the iron when being pressed open, the seam should be pulled open, using some little exertion in the operation,

and if it does not crack, the desired stitch or regulation has been obtained for the time being.

When regulating the top tension the foot on the head of the machine should always be lifted up and not allowed to rest on the drop feed. If this precaution is neglected the top tension will bo twice as tight as the shuttle tension, and the top cotton will break as soon as sewing is attempted.

Having, then, thus gauged the smoothness with which the cotton passes through both tensions, it is from this point the start is made to vary the tensions from cotton to thread or silk, or vice versa, as often as the change is required. When thread has to be used after cotton, both tensions should be loosened by one turn ; when cotton is used after thread, the reverse change, of course, is made. When changing from cotton to silk for stitching edges, both tensions should be tightened, so as to produce a good surface stitch.

All these variations in tensions for ringing the changes from cotton to thread, cotton to silk, and so on, after a time come quite easy. Practice and experience soon confer the necessary aptitude.

The principle upon which the regulation of the tensions is based may be stated briefly. In proportion to the coarseness or fineness of the cotton, silk or thread, so are the tensions regulated.

In quite a number of cases, especially where the machinist is on piecework, one tension is kept to, thus saving the time changing the tension necessitates. The result is bad sewing, which, moreover, is wrongly attributed to the sewing machine, whereas the operator is at fault.

In order of importance, the next thing is the winding of the cotton, silk or thread on to the bobbin (see Diagram 2). Imperfect bobbin winding is sometimes the cause of a loose stitch, and when the mechanic is sent for to remedy the defect, and finds the bearings in perfect order, he naturally is at a loss to account for the trouble.

Bobbin winding is often considered child's play, and the work consequently is relegated to the boy or girl just left school and in their first situation. This would not matter if these youngsters were properly taught, but the difficulty arises when they are left to themselves, and the bobbin is wound lopsided instead of evenly.

There are many contrivances in use for bobbin winding, but experience shows the following method is the most practical, as giving a sense of touch and firmness in the process :

First place the reel of cotton or silk in the palm of the right hand. After fixing the bobbin on the winder, which is attached to the head of the machine, and winding a few turns on the bobbin, let the cotton pass through the centre of the four fingers ; turn the wheel with the left hand, then treadle, and at the same time guide the right hand slightly sideways, right and left ; in this way a perfectly and evenly wound bobbin is obtained. It is not wise to wind to the brim of the bobbin, as by so doing the cotton or silk is likely to become entangled in the bobbin case.

THE BOBBIN, CASE AND SHUTTLE.

The fixing of the bobbin into the bobbin-case, and thence into the shuttle, sometimes causes trouble resulting in the breaking of the needle, owing generally to carelessness, or from lack of knowledge of how to do the right thing in the right way.

In placing the bobbin (Diagram 2) in the bobbin-case (Diagram 3), the latter

should be held in the left hand, the bobbin in the right, and with the end of the cotton or silk turned upwards and towards the operator. The hole of the bobbin should be placed in the hollowed stud of the bobbin case, as indicated on line A, Diagram 3. This done, the cotton or silk should be passed under the spring in the bobbin-case, which is contiguous to the tongue (line B, Diagram 3). The cut in the centre of Diagram 3 is where the cotton passes through, and may readily be seen on the illustration.

In fixing the bobbin-case to the shuttle the former should be taken in the left hand and placed (line A, Diagram 3) into the stud (line A, Diagram 6). Then turn the bobbin round until the tongue (line B, Diagram 3) falls into the notch (line B, Diagram 6), and, with the thumb of the left hand, push the bobbin-case until a click is heard, which signifies that the bobbin-case and bobbin are secured.

It often happens that the neglect of pushing the bobbin-case and waiting for the assuring "click" causes the bobbin-case to fall out on commencing to sew, and the bobbin revolves, thus forcing the bobbin case to fall out of the shuttle, dragging the top cotton with it, the force of which will cause the needle to break.

To remove the bobbin-case on Diagram 4, line B, an automatic spring tongue will be found; this should be lifted up with the first finger of the left hand, and the bobbin-case and bobbin drawn out to replace a freshly wound bobbin. After the operation has been performed the tongue should be dropped.

Line 1, Diagram E, points to what is known as the shuttle-plate. This is drawn out in order to see how to replace the bobbin-case. It is advisable, however, to practice taking out and replacing the bobbin-case without removing the shuttle-plate, and for this good reason: when a heavy piece of work is on the machine table, such as sewing in sleeves or stitching edges, it necessitates lifting the work up with the right hand and holding it until the bobbin has been replaced. This is very awkward and inconvenient, but a little practice in removing and replacing the bobbin and listening for the "click," would obviate the difficulty, besides economising time, which, to the pieceworker, means money, and to the employer, in the case of the day-worker, ditto.

REGULATING THE STITCH.

Line A, Diagram 1, towards the wheel, indicates the thumbscrew, by which the stitch is made larger or smaller. To make the length of stitch smaller, or to reduce the size, the screw should be turned with the right hand towards the left and lifted upwards, according to the length required, then turned to the right to tighten the screw. If a larger stitch is required, the thumbscrew should be dropped.

No hard and fast rule can be laid down as to the size of the stitch, this must be left to the judgment of the machinist to regulate according to the nature of the work engaged upon. In all cases, however, for stitching edges or quilting sidebodies, or putting in pockets, a smaller stitch is required than for sewing seams. It should be mentioned in this connection that some machinists sew round pockets with a large stitch, as they say it is inside work, and therefore not visible. Apart from the ethics of the matter, this is a mistake. Pockets should be sewn round with the smallest possible stitch, and with thread, as a severe strain is continually being put upon the pocket sewing.

It hardly requires an elaborate description upon the subject of threading the needle, as a glance at Diagram 1 beginning where the reel of cotton is placed, and following the various apertures the cotton has to pass through before reaching the needle, will be sufficient instruction for anyone.

TYPE OF FOOT.

The type of foot to be used is a matter of more than minor importance. Although the foot is attached to the foot pressure by means of a screw, the kind of foot used plays a vital part in the straightness or crookedness of the sewing. Three illustrations are given explanatory of what is meant by this.

Diagram 9 shows the double foot.

Diagrams 10 and 11 are both single feet, or "foots." In tailoring a double foot should never be used, as the left-hand portion of the foot prevents the machinist from seeing how to sew a straight seam, or to stitch a very fine edge. It would be even worse for putting in pockets. Moreover, it would be a great strain on the eyes in attempting to sew straight, and it would be an obstacle in gauging the width of a seam. Of the two single-foot illustrations, either of which may be adopted, we prefer the one shown on Diagram 10, which is very useful for putting in outside pockets and welts, and for seam-sewing. It is very obvious the more light directed towards the eye of the needle the better able will the machinist be to do his work.

For swelled edge work the foot, Diagram 10, is indispensable, as more room is provided for the narrowest swelled edge.

Should the machine have a double foot, any mechanic or engineer will cut it down and file it in a very short time to the shape shown on the diagram herewith. The foot, it must be added, is taken off and replaced with the aid of a screw-driver. This is quite a simple matter, as the foot will not go higher than the screw, which is first placed in the hole of the foot pressure.

Diagram 8 is the needle-plate, and Diagram 7 the drop-feed, both of which can only be used with either single foot.

If the double foot has been cut down to a single foot the needle plate and drop-feed (Diagrams 7 and 8) must also be changed; these, however, can be obtained at any sewing machine agent's for a few pence. They are easily affixed by the screws A and B on Diagrams 7 and 8.

Again, with the double foot it is impossible to use a stitch guide, Diagram 12, as observation will show that it cannot be placed between the edge of the coat and the left-hand part of the foot. The advantage of the single foot, which confers this boon, is at once apparent.

The stitch guide is a very useful contrivance, especially for flaps and edges. It ensures a firm and straight edge at all times, and under all conditions, which cannot be said when its use is discarded. Every machinist, however practical and expert he may be, would be well advised to utilise the stitch guide. It relieves the strain on the eyes, economises time, and, withal, gives better results.

With the aid of the guide the finest edge on the thinnest material, to the widest double-stitch on the heaviest material, may be stitched, and perfectly straight. The guide is easily fixed. On the bed of the head of the machine there is a small hole, and this is the part where the guide is screwed on.

After placing the needle on the coat according to the width of stitch required, the guide should be pushed to line A, Diagram 10, up to the edge of the coat or flap, whichever is required to be stitched, and tightened with the screw. This, of course, only applies to edge-stitching, and not to sewing seams.

Line C, Diagram 1, is the pressure-foot, and upon its use depends the way the seam is stretched or not stretched, as the case may be. In the former case the garment may be crippled as a consequence, or even "killed" out right.

THE CAUSE OF SEAM STRETCHING.

It has been frequently said that the sewing machine stretches the seams, and the charge is brought forward as an argument against its general adoption. As a matter of fact it does nothing of the kind. The machinist stretches the seams by forcing the machine to do this by its improper use, as, for example, through lack of the correct manipulation of the pressure bar. It comes about in this way:

On Diagram 1, line C, a small thumb-screw will be observed, which is represented separately on this page. It is called the pressure-bar disc, and failure in manipulating this disc for the different kinds of material is responsible for a great deal of unnecessary seam-stretching.

Diagram 14 is the pressure-bar to which the foot is attached.

Diagram 15 is the pressure spring, which is fixed round Diagram 14, and the disc holds the spring down. To tighten the disc it should be turned towards the right, to loosen it to the left (see Diagram 1).

This operation or change has to be continually repeated during the day's work, when transferring from thick to thin materials, or vice versa.

The cause of seam stretching lies in the fact that the pressure-bar has been screwed down too tight, which prevents the free passage of the material between the foot and the drop feed.

After the pressure foot has been properly gauged to admit the free passage of the material, it should be loosened when stouter material is being sewn, and tightened again for a thinner material.

In order to get a proper gauge from which to make a starting point, the following method may with safety be adopted: Place two similar pieces of material between the foot and the drop feed, and push it backwards and forwards with the right and left hands, dropping the pressure foot. If it passes through without catching, then the pressure bar should be tightened until the material is slightly held. That gives the starting point to change from thicker or thinner material without being in any danger of stretching seams, even when the material is cut on the bias.

If, after having sewn a thin material such as pocketing or italian lining, a cloth seam is sewn without changing the pressure by loosening, there is a likelihood of the seam being stretched, for which the machinist is solely to blame.

This should be borne in mind by the machinist, as a stretched seam, if not observed by the presser when opening same, will prove a source of annoyance and trouble to the cutter, and probably result in an alteration.

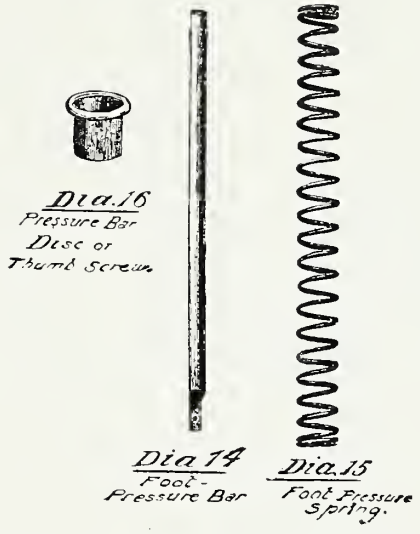
Conversely, if a thick seam is being sewn, and the machinist reverts to a finer material without changing the pressure bar, an uneven seam will result, as the pressure bar will not be firm enough to grip the material.

What has been said with regard to the regulating of the pressure bar refers equally to sewing a seam where the cloth is cut on the bias, such as the hindarm of a sleeve, or the sideseam of a Morning or Frock Coat. There is a possibility of such a seam being stretched, if the same force of treadling is used as when sewing up an ordinary seam. When the machinist comes to the more prominent part of the round, to avoid the contingency named he should slacken speed slightly, which is done from point A, Diagram 13.

THE NEEDLES.

The question of needles requires just a word or two, as it is important to know what kind of needle to use and what not to use. Sizes $2\frac{1}{2}$ and 3 are really the only sizes necessary in a tailor's workshop. The $2\frac{1}{2}$ size may be used for all kinds of general work, and size 3 for heavy materials.

The proper setting of the needle in the machine is a simple matter, yet many machinists, bungle at it. The balance-wheel, which is on the right-hand side of



the head (see Diagram 1), should be turned towards the operator until the needle bar reaches its highest point. Then loosen the screw in the needle clamp, and put the needle into it as far as it will go, with its long groove to the left: then screw fast.

If the needle is set with the short groove to the left, the top cotton will break on commencing to sew.

The machine should be oiled only once a day, and that before leaving off work at night—the morning is not the best time. Oil holes are provided for all bearings. To oil oscillating rock-shaft bearings take out the oil reservoir stop-screw in the back near the bottom of the upright part of the arm; fill the reservoir with oil and replace the top screw.

The oscillating rock-shaft hinge pin is hollow, with openings from its chamber at the places necessary for the proper distribution of the oil, and it connects with the oil reservoir.

Before leaving the machine for the night a spare piece of cloth should be placed under the needle to receive the oil dropping from the needle bar, so as to prevent the work from being soiled.

Having thus described in detail the necessary parts, the machinist should be *au fait* with, the next step is the working of the machine.

HOW TO WORK A MACHINE.

The first thing to learn in the working of a sewing machine is how to treadle correctly in order to have command over it. A few instructions upon this matter will not be out of place.

First, let the right foot rest on point A, Diagram 13, and the left on point B. Turn the balance wheel towards you with the right hand and move feet up and down. Stop every ten minutes for a brief space, and then repeat the treadling. In the course of this operation the feet will slip, and the balance-wheel turn from you. When this occurs the machine must be stopped, and the process began over again, by turning the wheel towards you. This should be continued for at least one whole day, and until you become accustomed to treadle the machine without the necessity of using the right hand for turning the wheel, as at a later stage the use of that hand will be required.

Now take a sheet of brown paper, place it under the needle; drop the pressure-foot and sew in straight line. When doing this the bobbin-case should be taken out and the needle left unthreaded.

Hold the right hand under the arm of the machine, while the left arm should be resting on the table, and with the hand slightly on the paper to prevent it from shifting, and in order to avoid a crooked line. This should be practised until proficiency is attained in sewing or marking a straight line. Until this has been achieved no attempt should be made to sew with cotton, as it is more difficult for a beginner to sew a straight seam with cotton than without.

After the ability to sew a straight line has been acquired, and the eye and hand have been sufficiently trained, the venture may be made of threading the needle and bobbin, and some waste cloth requisitioned to practise upon.

What has already been said with regard to the proper formation of the stitch through regulating the top and bottom tensions, should always be borne in mind.

In this connection, too, it is well to practise the use of the pressure bar upon thick and thin materials, as the capacity and skill thus acquired will prove of great value when engaged upon some minor part of the garment—sleeve-making, for example.

GARMENT MAKING BY MACHINE.

It is assumed that those who have followed closely what has been previously explained and illustrated by drawings and photographs are thoroughly acquainted with all parts of a sewing machine that form the stitch.

That being so, the actual making of garments may therefore be proceeded with.

Much of what has been already said may appear to some to have been unnecessary, and even trivial; but as we proceed stage by stage, section by section, in the making of garments, the reason for going into such a mass of detail at the commencement will become more apparent.

SLEEVE MAKING.

The first thing given to a learner on the sewing machine is invariably the sewing up of the forepart of a sleeve, as this is considered by many to be the least important part of the garment, and, therefore, can be entrusted to the beginner. This is a common mistake, as in reality there is no such thing as the "least important" part of a garment. All sections are equally important, and bear a proper relation one to the other, and have to fit their parts as cut. To underestimate the value of one section is to affect the whole garment, and the indifferent making of one part may throw out of balance the finished coat. It is very obvious the object of cutting out the garment in sections is for the purpose of making it fit the contour of the figure, consequently all parts are equally important.

SEWING THE FOREARM.

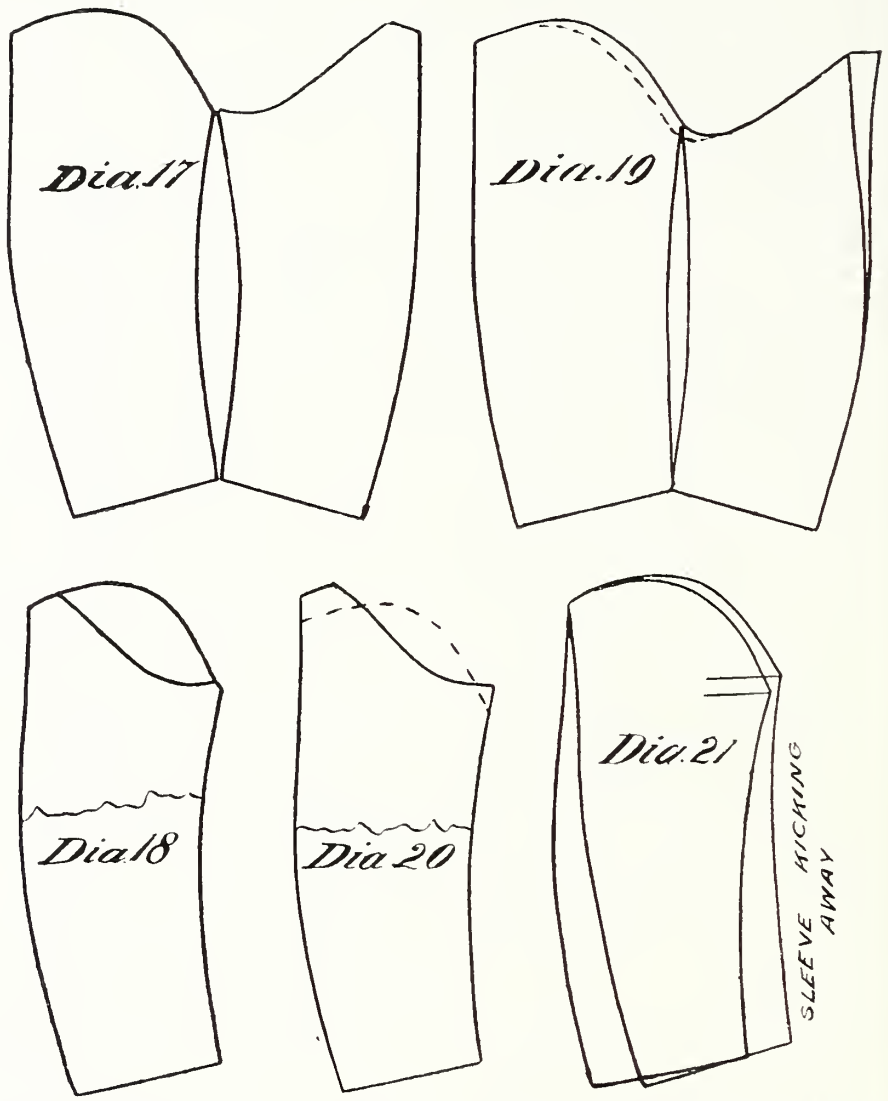
The accompanying diagrams show the necessity of sewing up the forearm of sleeve proporly and accurately, otherwise the imminent danger of a "kill" of the coat.

DIAGRAM 17

Represents the forearm of the sleeve sewn together in the correct manner, and shows when finished and ready for sewing into the seye or armhole an evenness of top and under-arm. In order to obtain this desired result the machinist should begin to sew up the forearm by leaving out a $\frac{1}{4}$-in. of the underarm-seam, as represented on Diagram 20. The dotted lines give the outline of the topside.

Whether the right forearm is sewn up first, or the left, makes no difference; in either case, however, the sewing should start at the front seye sleeve pitch. The question may be asked here, "What happens to the sleeve if the $\frac{1}{4}$-in. of underarm sleeve is not left out, as suggested?"

The answer is this: If the sewing is begun by getting the two points level, as



shown on Diagram 18, when the sleeve is pressed open the result shown on Diagram 19 is obtained. The dotted lines on the topsleeve in the latter diagram meet the point of the undersleeve, and it is no unusual thing for learners in this case to cut away the topsleeve to the extent of $\frac{1}{4}$-in.

They have been told that the sleeve should be level all round for seaming into the seye, but were not instructed how to arrive at that result, consequently, when it is found a little of the topside projects they quite naturally cut it away.

This may appear a small matter to the person who cuts away the surplus material, and who, not knowing or caring how the sleeve should hang, cannot realise the effect of the bad machining and free use of the scissors, and therefore thinks that no harm has been done.

Let us see what actually occurs when a sleeve is sewn up as per Diagram 19.

The forearm pitch is thus lowered $\frac{1}{4}$-in., as a result of which the sleeve is given a backward hang, or kicks away after it has been sewn in, as shown on Diagram 21.

If the sleeve be taken out and pitched a little higher to give it a more forward hang, a tightness at the front of scye follows.

Apart from this defect, a twisted sleeve ensues, which no amount of pressing can cure, as the sleeve will persist in falling back into its place.

The improper sewing up of the forearm, as shown in Diagrams 17 to 21, not only affects the forepart of the sleeve, but also the backpart, when the hindarm sleeve comes to be sewn.

A glance at Diagram 22 will show how the topsleeve is placed in relation to the underside, the former projecting about $\frac{3}{4}$-in. above the latter when laid flat on the board. Now no machinist would be so foolish as to sew the hindarm-seam in the manner illustrated, so in order to get both halves of the sleeve level, the surplus amount is gradually fulled in towards the elbow.

What, then, happens to a sleeve treated in this manner, is, after it has been pressed and turned out, instead of the front and back-arm sleeves being level, the topside forces itself behind the underside, as shown on Diagram 23. The result follows that when the hindarm-sleeve is pitched to the back for sewing into the scye, that part of the topsleeve will always "kick" itself up at the shoulder-point when in wear. This means trouble for the cutter, and a sum to be paid for alterations.

This brief dissertation should go far to show that, after all, the sewing up of the sleeve forearm is not the "least important" operation in coat-making, and that care and attention and judgment are requisite if the thing is to be satisfactory.

In a subdivisional workshop where there are more than two machines, it often happens that the person who sews up the forearm-seam does not sew the hindarm. When this is the case the latter, should he find that the sleeve lies on the table in the position shown on Diagram 22, will know at once that a part of the forearm has been cut away, instead of undoing the sleeve and sewing it in the proper way. as described. Such a sleeve should not be proceeded with any further, or trouble will assuredly follow.

The alteration necessary in order to restore a sleeve so treated to its original position, or nearly so, might be given, but we purposely refrain from so doing. This is not from any unworthy motive, but purely by reason of the fact that to do so would be an incentive to carelessness and indifference, and bad workmanship. Our sole aim is to promote efficiency, hence the omission.

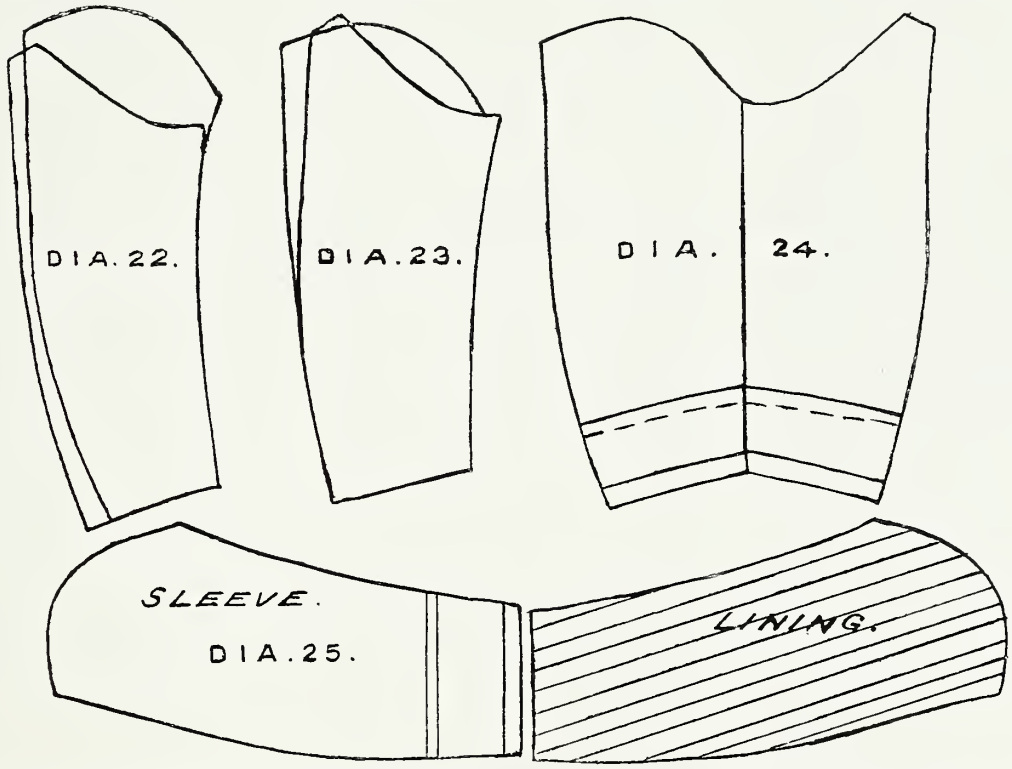
STITCHING THE CUFF.

Before the hindarm-seam is sewn it is customary to stitch the cuff, either one or two rows of stitching. In doing this a thin piece of material—not on the bias—should be placed underneath the chalk-mark, and held a little tight during the process of stitching. When pressed out on the wrong side this will give the sleeve a smarter appearance, owing to its firmness.

In stitching the cuff the top part of the sleeve should always be towards the wheel.

If double-stitched, the second row should be underneath the first, and not above (see Diagram 24), and should be stitched according to the foot, and not the eye; that is to say, after the first row of stitching turn the sleeve round so that the foot will be between the first and second rows of stitching. If this is not done the sleeve gets somewhat puffed between the stitching, and as the underneath material is caught, it is difficult to press this away on the right side; and even if it were pressed away it would return after a time. In dark material it is not so noticeable, but in the lighter shades the puffing is more pronounced and obvious.

Another reason for stitching according to the foot is that, when the material underneath the sleeve is just about the width of the second row of stitching, it catches; but if stitched according to the eye, the second row will be crooked, because one-half of the foot will rest on the sleeve only, which prevents the steadiness of the stitching. Moreover, the second row will not be caught with the underneath material, and the cuff will not exhibit the appearance of two kinds of stitching.



SEWING THE SLEEVE LINING.

The next process in sleeve making is the sewing of the sleeve lining to the sleeve. In the higher-class trades the sleeve lining is felled in round the cuff, but there is no reason why it should not be sewn in by the machine. The objection to this has been stated and explained, that the sleeve lining is likely to get soiled during the operations of making and pressing open the seams. This, however, may be obviated by the sleeve lining being kept back for sewing on until the sleeves are completely finished in every respect.

In the cheaper class of bespoke trades the sleeve lining is sewn to the sleeve before the hindarm is sewn together, because it is easier to do this, and quicker where a quantity of garments are undertaken. But in the better-class trades this can be done after the sleeves are finished, although it takes a little longer time to do the latter than the former.

The operation of sewing in the sleeve linings is as follows: Place the sleeve on the machine table with the cuff towards the needle, the lining on the bed of the machine; place forearm of lining to forearm of sleeve (see Diagram 25), and with the sleeve on the drop feed, sew the seam round. It will necessitate several stops with the machine to complete the process, but, apart from the saving of felling, it is useful practice to the machinist, as the first and second fingers of the right hand are brought into action, and the same fingers are used when sewing in sleeves by the machine. Care, however, must be taken so that when the two forearms are placed together both topsleeve and topsleeve lining are level (see Diagram 25), and with the other sleeve the two undersleeves are on top. It is also necessary to see that the back-arm sleeve lining is not placed to the forearm of the sleeve.

In the case of an inlay on the sleeve lining round the cuff, about $\frac{1}{2}$-in. of the sewing of both should be opened, the sleeve lining should be placed on the feed-wheel and sewn where the inlay is marked (which is usually a dent made by the thumb nail), then the few stitches re-sewn.

Before turning out the sleeve the lining should be brought over to the turn-up of the sleeve, and fastened to the seam, back and front; this keeps the sleeve in position, and is done by the tailor, and does not come within the purview of the machinist.

To fasten a seam after it has been sewn is not an easy matter to the novice at first, and in sewing up the forearm, sometimes ripping the seam and re-sewing is resorted to as a consequence.

In order to fasten a seam it is necessary to proceed as follows: After sewing about $\frac{1}{2}$-in. of the seam, lift up the foot and needle, and, without breaking off the cotton or thread, begin the seam over again; when the other end is reached follow the same process.

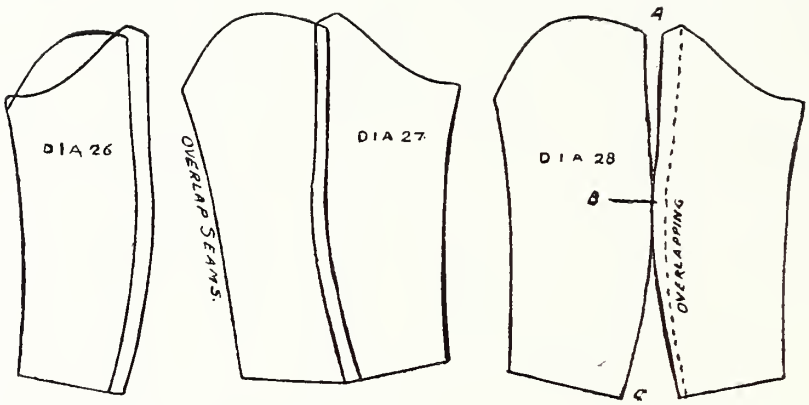
Before breaking off the thread or cotton, after having sewn the seam, lift up the foot, and the needle-bar should be at its highest; then draw out about 2-ins. of both top and bottom threads, and cut off close to the edge of the seam. The object of this is to have sufficient length of thread to form the loop for the catch-up of the bottom thread when starting a new seam. If this were not done the needle would have to be threaded each time for sewing.

When fastening, the same stitches should be sewn in, otherwise the seam will be pressed open with difficulty.

SEWING RAISED SEAMS.

The sewing of raised or overlap seams must not be overlooked in this connection.

It is not customary to raise or overlap the forearm-seam, therefore the back-seam has to be sewn up first. In doing this the top and undersleeve should be placed level, and a point of the undersleeve left out, as though the forearm had to be sewn first. Diagram 26 will show clearly what is meant. All of the undersleeve should be left out by taking the two forearm-seams together, afterwards sewing the hindarm-seam.



An ordinary $\frac{1}{4}$-in. seam should be sewn, then the sleeve opened as illustrated by Diagram 27, where the topsleeve is shown overlaid on the undersleeve. If the sleeves are to be double-stitched, a fine single-stitch must first be sewn, and then the second row according to the foot and width required.

In stitching, both hands should rest lightly on either side of the sleeves, with the middle fingers close to the edge of the foot. With the two middle fingers of the left hand the topsleeve should be pushed aside during the process of stitching, so as to prevent the sleeve overlapping one side more than another.

When stitching the first edge a pause should be made at least three times, as, owing to the sleeve being cut on the round at the elbow, the position of the sleeve must be adjusted in order to ensure accurate stitching. The same number of pauses should be made in stitching the second row, so as to equally distribute the surplus material of the undersleeve at the elbow. This can be done whilst the hands are on the topside, and without placing the left hand underneath the sleeve the surplus material can be felt on the top, more especially with stout materials.

If the overlapping is to be swelled edge, then it should be stitched according to the front, which helps to flatten the seam. If raised according to the eye there is a possibility of unevenness, especially at the elbow, at the point where skill and patience are necessary to negotiate the round there.

Some machinists sew the hindarm-seam as near the edge as possible, instead of taking the usual $\frac{1}{4}$-in. seam; but this is a mistake for a double reason. First, the stitching of the first edge is likely to result in it fraying out, and, secondly, the foot will, during the process, be partly on the seam and partly off, which is not conducive to accurate stitching. To take a wider seam is therefore best and safest, and avoids any remote possibility of the contingency named.

STITCHING THE CUFF.

The next operation is the stitching of the cuff, after which the forearm-seam is sewn.

If the sleeve lining is to be sewn on across the hand before sewing up the forearm, then the hindarm-seam of the lining must be sewn up first instead of the forearm.

If several rows of stitching have to be sewn on the cuff, as in covert coats, etc., each row should be sewn according to the foot.

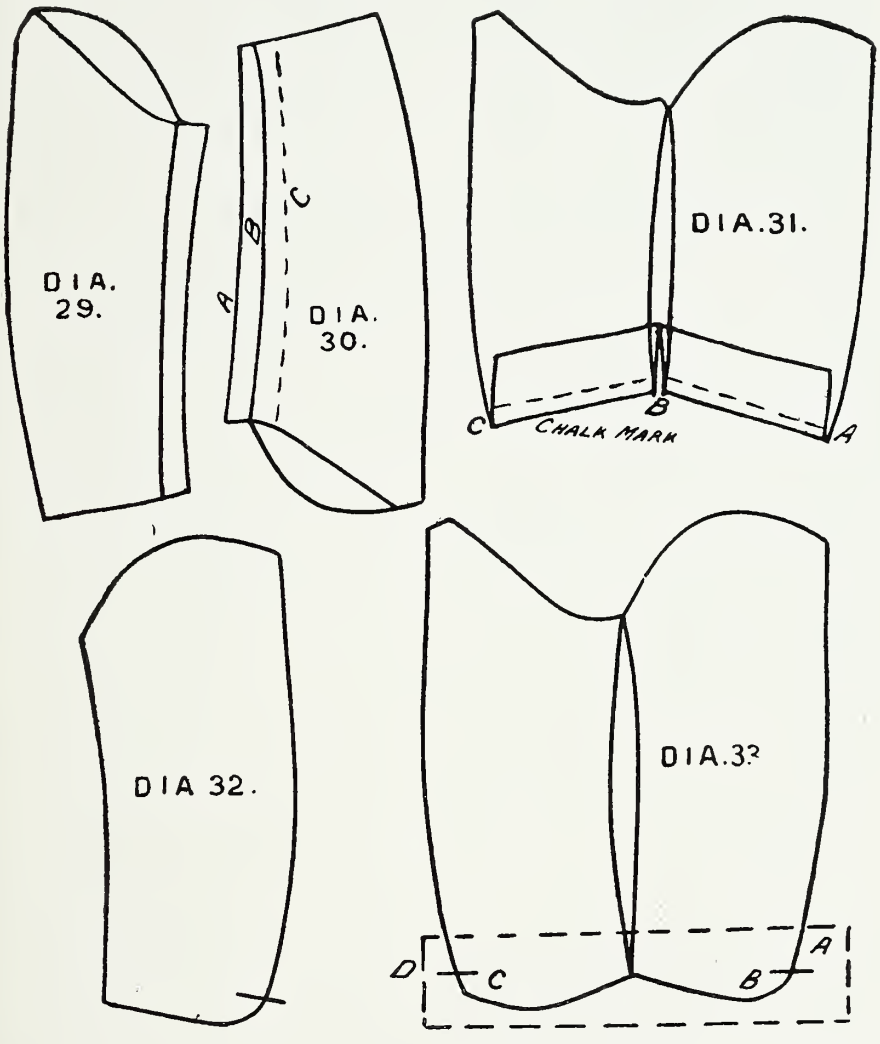
In sewing up the forearm-seam care should be taken that the stitches of the cuff will meet each other, which means that equal widths between the rows must be maintained right across the cuff.

Although the forearm of a sleeve may be sewn up correctly (as per Diagram 20),

the unevenness of cuff stitching, or the inaccurate marking of the cuff for stitching, will result in a twisted sleeve when sewing up the hindarm, if care be not taken.

In most workshops it is the custom for the tailor in charge, or the fitter-up, to mark the sleeves for stitching, but to save any mistake the machinist should, before commencing to stitch the cuff, place the chalk-marks together to see whether the sleeve lies in a proper position for sewing up the seam ; if not, then the cuff must be re-marked. It is much easier to re-mark the cuff at first than to take out the stitches afterwards, and more satisfactory, as in the latter case the needle-marks may show.

Sometimes a customer insists upon the forearm-seam being raised or overlapped, as well as the hindarm ; then a different method must be adopted. In this case the forearm-seam should be first sewn and overlapped, and then the hindarm. The reason for this is that the hindarm-seam affords a wider scope for overlapping when under the needle than the forearm. But even in this instance the hindarm overlapping has to be done in two halves, as follows : First overlap from top to centre of sleeve ; then break off top and bottom silk ; place the sleeve at the back of the foot and draw it towards the operator until the part is reached where the silk has been broken off ; then recommence to overlap. This operation is not easy to perform owing to the narrowness of space round the cuff portion.



With the right sleeve the overlapping begins at the cuff and breaks off at about midway ; then the other half is treated in the same manner. As the sleeve becomes wider the overlapping becomes easier.

The experience gained in mastering the raising or overlapping the hind and forearm-seams will prove of great service when the armholes have to be overlapped.

It might be pointed out that it takes double the length of time to overlap the hindarm-seam where the forearm-seam is overlapped first than it would otherwise. It is not usual to raise the forearm-seam of a sleeve, but it is worth knowing how to do it should the necessity arise.

In large factories an overlapping machine with two needles, and with an arm and special overlapping guides, is used for the work under consideration, and it is done in one operation ; but in the small tailor's workshop the machinist must do the work on the ordinary sewing machine.

The difficulties of overlapping a hindarm-seam, when the forearm is overlapped, however, become lessened upon thinner materials, such as flannels or covert coating, where there is no need to overlap in halves, as in the heavier materials. In the lighter weight materials the cloth can be bunched up in the hand, and still the fingers of the left hand be free for the overlapping operation.

Diagram 28 will explain what is meant by overlapping in halves in heavy materials.

The procedure to be followed, assuming the forearm-seam is sewn up, is to begin to overlap from A to B. Upon reaching B, break off and put the sleeve at the back of foot, then draw towards C until B is reached ; break off again and recommence down to C.

The second row is commenced according to foot from C to B ; break off, then draw A towards you to B, and finish at A.

This appears simple on paper, but is not in practice.

TURNED-IN SEAMS.

In addition to the ordinary raised or overlapped seam already described, there is another kind of lapped seam more difficult to make than the one referred to. We allude to the French or turned-in seam. This is chiefly resorted to on unlined work, such as flannel and alpaca jackets, etc.

The method of sewing up the forearm-seam in this case is different to others. No portion of the undersleeve is left out (see Diagram 29) because the top sideseam does not require to be pressed open. It is the undersleeve that is brought over to the topsleeve for turning in.

To commence, the undersleeve should be placed on the feed wheel as shown in the correct position on Diagram 29. The top and undersleeves are placed level as shown, leaving out at the side, and all the way down, a little over $\frac{1}{4}$-in. of the underside. Upon reaching the end of the cuff the silk or cotton must not be broken off, but the foot and needle lifted up, and the sleeve turned round as shown on Diagram 30, with the elbow or hindarm towards the wheel. The edge of undersleeve (marked A on Diagram 30) should be brought over to the dotted line C, and B will then be the

edge. Then open the sleeve, wrong side upwards, with one-half of the sleeve on the machine and the other half on the table; finally stitch on the edge of line B, a very fine edge.

As this stitching is done on the wrong side, care must be taken to have a suitable shuttle stitch, and a small one. This is called the French seam.

If preferred, the stitching on line B may be done on the right side, according to the foot. In so doing the first finger of the left hand must be kept well prossed on the seam to prevent it from stitching, thus causing irregularity of stitching, and what is known as a "lump" on the wrong side.

In unlined garments it is not customary to leave an inlay on the hindarm-seam, hence the backseam has to be treated the same as the forearm. The making up of the the hindarm, however, is more difficult than the forearm-seam, owing to the round at the elbow, so when bringing over the undersleeve to the top, when nearing the elbow, the undersleeve should be "fed" near the needle, gradually, of course, until the bend or round part is passed, when the remainder is practically plain sailing.

When this operation is completed, and it is necessary to stitch the edge down on the wrong side, the sleeve should be turned inside out. At the elbow point the fulness should be distributed evenly. As the material is thin, the necessity of broaking off half way does not arise as in thicker material, as the whole sleeve can, as it were, be taken in the palm of the hand.

The amount to leave on the underside for turning over depends upon the width of stitching required on the right side. If a $\frac{1}{4}$-in. stitching is wanted it is necessary to leave out $\frac{1}{8}$-in. extra for working up; if $\frac{1}{2}$-in. stitching, then $\frac{1}{2}$-in. should be left out of undersleeve, plus $\frac{1}{8}$-in. for working up.

As there is no lining to theso sleeves the cuffs are stitched about an inch in width round the hand; this is done by turning the sleeve inside out, and with the top part of the sleeve towards the wheel, stitch round the cuff as turned in.

Before proceeding with a description of the making of a button cuff, it will be best to deal first of all with another kind of sleeve as a preliminary, and in order to make the button cuff method better understood when tackled.

The sleeve in question is shown on Diagram 32 and has a short slit or vent at cuff, without button or buttonhole. Farmers, stablemen, etc., largely use such sleeves in their coats or sleeve-vests, in order to be able to turn them up at the cuff easily.

In this style the forearm sleeve is sewn up as usual, and the seam pressed open. A piece of the same material, or, if preferred a piece of italian cloth, is placed with the right side up on the wheel, and on that the sleeve as illustrated on Diagram 33. The dotted lines, A and D represent the material.

Seam as marked by line B, a $\frac{1}{4}$-in. seam, round the cuff half as much, and when nearing C, again to $\frac{1}{4}$-in. Make a notch at B and C as far as the sewing, and pare round close all the surplus from B up to C only. Turn it out without basting stitch either double or swelled edge. Break the edge out well. If double-stitched, put the guide on for the first edge (see earlier illustrations of the machine), and the second row on according to the foot, after removing the guide.

If the back-arm of the sleeve lining is not sewn up, sew the lining on the facing line marked B; then sew up the back-seam of lining. It should always be observed that B and C will meet before sewing up the hindarm. Of course, B and C must meet, but one point must not be shifted above another unnecessarily.

The cuffs may have a few tacking stitches put in by hand, and the sleeve lining is also finished off by hand.

In sleeves of this character tho hindarm-seam is usually raised, and in this case a portion of the undersleeve is left out for the purpose named.

In the ordinary instance of a backarm being raised and not the forearm, the hindarm is raisod first, cuff stitched, and forearm sewn up; but where tho facing has to bo formed round the cuff first, the backarm cannot be raised first, owing to the slit having to be made.

To simplify the raising of the hindarm without breaking off the silk half-way, sew up the forearm from the cuff only half-way, break-off, and then make the slits as described. When finished, complete sewing to forearm. With this method the sleeve is open for raising.

PIPING ROUND CUFF.

Some customers prefer a piping round the cuff, either of the same material or of velvet or other trimming. In this ease, when sewing round the same full on the underneath part at the round; also slightly at the bottom, then stitch out the cuff with the piping on the right side.

If a longer slit than an inch or an inch-and-a-half is required, the facing should be cut in halves at the forearm, and according to shape of the sleeve, sewn up and made as described. The reason for this is that the higher the cuff the wider tho sleeve becomes, and all that is necessary to obtain the spring cannot be fulled on round the cuff; therefore it has to be cut in the centre, and just sufficient left out at sides to full on should piping be required.

The making of a formed cuff next occupies our attention, as occasionally customers prefer this in addition to the button cuff.

The forearm-seam is sewn up as usual (this cuff is marked with chalk on the wrong side) and the sleeve placed on the machine table, with the cuff towards the wheel, right side up, the cuff is then turned over as Diagram 31, until the chalk-mark is reached, which will then be the edge. A narrow seam is sewn from A to B, the foot lifted, but not the needle, the other half of the sleeve straightened, and the foot put down, and a stitch sewn from B to C. The reason for lifting up the foot at B is that at this point there is a tightness which lifting up the foot eases, and affords the opportunity of sewing the other half of the cuff as the first.

If the edges are bluffed, then the cuff must be pressed before sewing the hindarm, if stitched, either single or double, then this is done without first pressing.

Now, assuming the formed cuff is to be a wide double-stitched one, and there is not sufficient material to admit of such a wide seam being taken, as the sleeve might thereby be shortened, the first thing to do, when sewing from A to B, is to place underneath a strange piece of material with the widest part towards the cuff, exactly the same as placing a piece of linen under a pocket. This enables the second row to be stitched with safety, at the same time catching the first row.

BUTTON-CUFFS.

There are two methods of making stitched button-cuffs, one without the sleeve lining, and the other with it, and although the two methods differ, the finished result is the same.

The button-cuffs, with the sleeve lining, are made complete with the machine, and the system of making generally adopted in the medium and cheaper-class bespoke trades. The method adopted in the better medium-class trades we will now describe.

Diagram 34 represents the top and undersleeve. Take a similar piece of material to the sleeve and cut to shape of A, as per diagram. Sew this on to line B, as shown, and have it pressed open. Then sew up the forearm-seam, turn over on the wrong side the piece marked A, and sew an ordinary seam from C to D, which is the cuff mark.

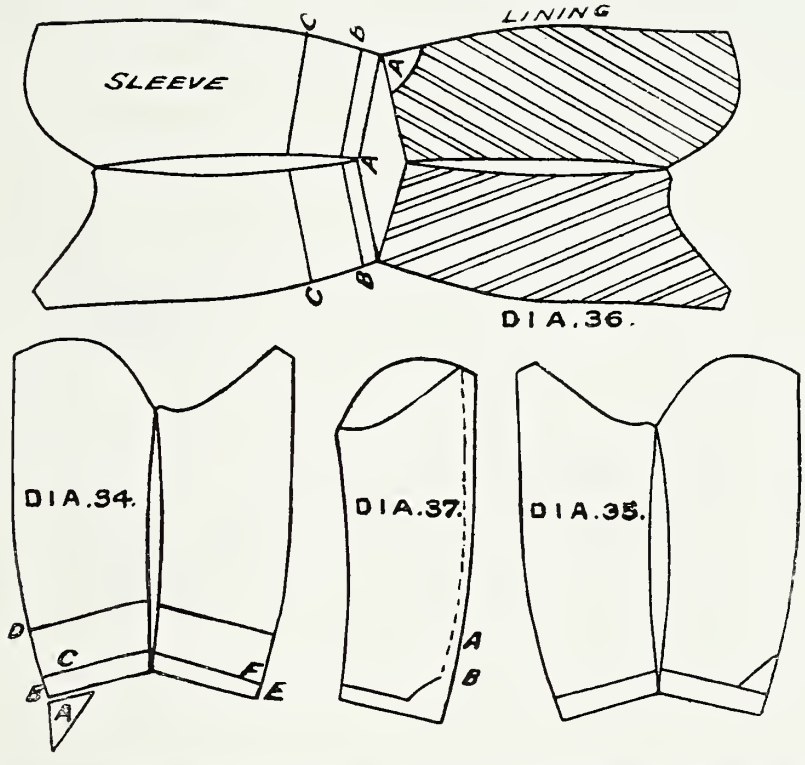
Next place a piece of linen either underneath or on top when sewing this seam. The linen should be wide enough to cover the buttonholes; then sew a seam on under sleeve from E to F.

The tailor will then pare the edge from C to D, also from E to F, and baste it up. After it is basted up and pressed down it

will represent Diagram 35, on the wrong side. The cuff is then marked with chalk by the tailor, when both cuff and slit are stitched either single or double, as required.

The reason for taking an ordinary seam from C to D, and then paring it away, is because sufficient width of seam must be allowed for sewing up the back arm.

The cuff and slit having been stitched, it is now ready for tacking by machine. First cut away any surplus of the piece of material marked A above the cuff stitching. Place the sleeve right side up on the machine table ; bring the topsleeve over to the undersleeve, as marked on Diagram 37, and sew a seam about an inch only from A to B, Diagram 37.



In bringing the topsleeve over, the front seam must be level, and whatever amount projects of the undersleeve must be left, as this forms part of the inlay. Before sewing from A to B the cuff stitching should be matched.

When the sewing from A to B is completed, break off the silk, place the slit under the needle, and tack the sleeve at point B about $\frac{1}{2}$-in., either horizontally or on the slant, according to taste. If the tacking is to be straight this may be done in the same stitching as the cuff, once backwards and forwards being sufficient.

After this, the sewing of the hindarm is completed, and the tailor will finish the sleeve lining and felling.

The question might be asked : " Why should not the whole sleeve be sewn up before tacking, instead of only 1-in. ? " The answer is, " Because if more than 1-in. had been sewn it would not be possible to get to the cuff for tacking ; as it is, practically the whole sleeve is open to complete the cuff.

If the hindarm-seam has to be raised in addition to the button-cuff, then the forearm-seam is only sewn up about an inch above the cuff stitching, and then completed as described ; and when finished the remainder of the forearm is sewn.

Assuming, in addition to button-cuff and raised seam it is necessary to make a firmer cuff instead of plain stitching, then the material is sewn on A to B as usual, and part of the forearm. Have all this pressed open, the cuff marked on the wrong side and sewn as described in previous chapter, then proceed to finish as explained in the present one.

The next method is where the sleeve lining is sewn in, instead of being felled. In this case it will be more difficult for the machinist to complete the cuff and obtain a satisfactory result ; but patience and perseverance work wonders, and a little practice gives a ready expertness.

The following is the procedure : Instead of the piece of material marked A being sewn to the sleeve, a similar piece of sleeve lining is cut out from the topsleeve at the cuff end (see Diagram 36), and piece A is substituted for what has been cut out and sewn on as Diagram 36.

The lining with the piece marked A is sewn across the bottom of sleeve, line A. Turn in on the wrong side from B to C, both top and undersleeve, and sew a seam as described in connection with Diagram 34.

Sew a piece of linen on both sides for buttonholes and button-catch. It will then be basted out and pressed, the cuff having been previously marked is ready for stitching. In stitching this cuff pull the sleeve lining down. When ready for tacking, bring the topsleeve over to the undersleeve, as per Diagram 37, as above explained. Push back the lining and sew a seam, as from A to B, then break off.

Bring the sleeve lining over the cuff stitching, so that the lining is on the wrong side, and then sew about an inch of this, as from the point of cuff stitching. Then turn the sleeve inside out, when the lining will be on the right side ; tack the cuff through the lining, break off, turn the sleeve inside out again, and sew up the two hindarms.

The lining does not require to be basted in as per Diagram 34, and the only pieces of lining to be felled are the two pieces at the side of the cuff.

At first sight this method may appear very complicated, and to the beginner somewhat puzzling and confusing. Indeed, the initial attempt will possibly fail, and it will be therefore necessary to undo the stitching from A to B, as the lining is likely to catch at that point. After, however, experimenting upon three or four pairs of sleeves the knack or skill will be acquired.

It is essential that the aptitude for the sectional processes outlined should be thoroughly mastered by the machinist at this stage, as a preparation for still more difficult operations to follow. But we will not anticipate.

If the sleeve which is to be lined by the machine has to be formed with the cuff, then sew the cuff before seaming the sides B and C. If raised seams in addition, then sew up the forearm above the cuff stitching as above explained.

BOUND AND CORDED CUFFS.

As a preliminary to making corded and bound pockets by the sewing machine, the cording and binding of sleeve cuffs is the first stage, as it onables the machinist to gain experience in manipulating the cord and braid.

For the purpose of cording by machine a special foot is required ; but in order to facilitate matters and prevent constant changing of the foot, one must be resorted to which will serve the double purpose, both cording and sewing, without changing.

Diagram 38 represents a double foot with a hole in the centre for the cord to pass through to keep it in line, and at the same time to enable the needle to sew the

cord. This foot, however, has its disadvantages, because it covers or hides the chalk line on the cuff; neither can the corner be turned as is required for the button cuff. While this foot may be useful for cording skirts and collars of ladies' garments, for the reason named it will not suit the purpose we are now considering, hence the ordinary single foot must be altered (see Diagram 39) so that it can be used for sewing as well as cording, without being changed.

The alteration necessary is as follows, and will be made by any sewing-machine mechanic. The single-foot should have a groove cut about one-sixteenth of an inch underneath the foot, commencing from where the needle passes through the work to nothing. The groove is illustrated on Diagram 39.

This groove, which is half the width of the cord, enables the foot to rest on the cord, and prevents shifting during the process of sewing, and, moreover, does not in any way interfere with the ordinary sewing, thus one foot serves a double purpose.

To commence cording a plain cuff the sleeve should be placed under the needle on the chalk line of the cuff; put the cord underneath the foot, drop it, and commence to sew. Always keep the cord in the right hand; place it on the chalk mark and sew as if it were an ordinary seam. Do not pull the cord, but let it go easy and loose, and as long as the chalk-line is adhered to, it is certain that the sewing will be in the centre of the cord.

Some little anxiety may be felt at first, fearing that the foot will slip off the cord, but it will not if the groove is filed in accordance with the above instructions.

If a stitching is required next to the cord, this must be done according to the eye and underneath the cord, not above it. It will be necessary to place something under the sleeve when sewing on the cord, so that the second row of stitching will catch it, instead of the sewing being on the bare sleeve.

If a corded formed cuff is required, then sew underneath the formed cuff first (see previous Diagram 31); open sleeve; place under the machine with the armhole part towards the wheel, so that the foot will rest on the formed cuff. Place the cord in that seam and stitch it down. Keep the cord in the seam all along.

If stitching is required next to the cord it has to be done according to the eye, and not according to the foot. It is always wise to enquire whether stitching next to cord is required before seaming under the cuff; if so, then a little wider seam will have to be sewn under to admit of the foot resting on the seam for stitching.

BUTTON-CUFF CORDED SLEEVE.

Having mastered the cording of a plain cuff, the next step is the making of a button-cuff corded sleeve—a more difficult operation.

In this case first sew on a piece to the sleeve (see Diagram 40), but do not tack the seam at the elbow, as a few stitches will require opening at that point to admit the cord into the seam.

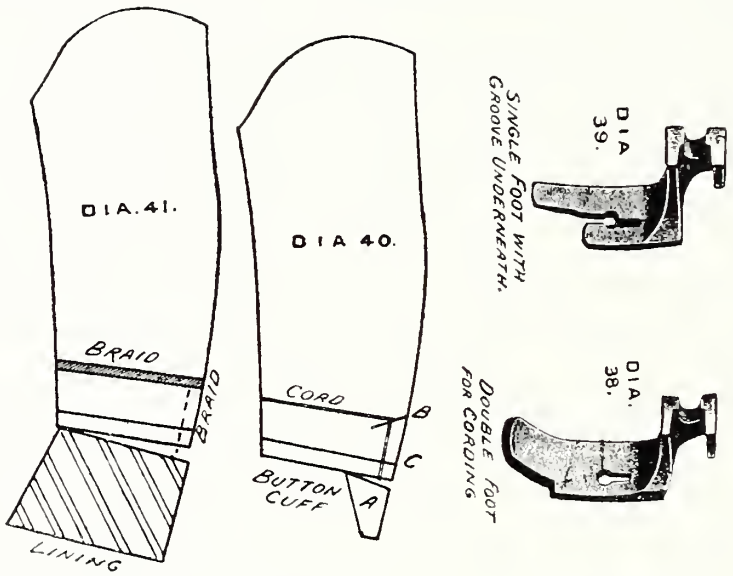
The undersleeve is omitted in the diagram, but of course the cord will be sewn on that part when sewing it to the topside.

After the forearm has been sewn up, the seam pressed open and cuff marked, begin with the left sleeve first, so that the armhole part shall be towards the wheel. Stitch the cord on the chalk-mark until reaching the top-sleeve, stopping $\frac{1}{4}$-in. from the hindarm-seam.

The slanting notch instead of a straight one gives a clean and distinct point of the cord when the sleeve is basted out and ready for tacking. The process of tacking is done similarly to that of a stitched cuff.

It is, of course, more difficult to get the two cords to match for sewing up the hindarm-seam, in consequence of the cord being round, but this obstacle can be surmounted. Before seaming, knock the cord down to flatten at the seam with the handle of the scissors, which will help to improve matters.

If the sleeves have to be made right out by the machine, including the sleeve lining, then the same process is followed as for stitched button cuffs. The fact of the sleeves being corded instead of stitched, makes no difference to the principle of making the button cuffs.



Lift the foot and needle up and push the cord forward a bit so as to form a point. Place the needle into the cord; drop the foot and stitch the cord down the side, as shown on Diagram 40. Cut the cord off, leaving about $\frac{1}{2}$-in. out. Open a few stitches with the point of the scissors at the seam A; pass the cord through and re-sew the seam; this saves hand-work of fastening the cord, and is much neater.

Turn in cuff at C and sew seam to B. Sew this seam as closely as possible next to the cord. As a guide to this the stitches on the wrong side of the sleeve, where the cord has been stitched on, serves the purpose.

In an ordinary stitched button-cuff, as explained in the last chapter, a straight notch is given at point B for turning out the cuff; but in the case of cording a slanting notch is necessary (see Diagram 40, point B), up to the point of the cord.

BRAIDING.

In the best-class firms the braid is sewn on the cuff and then felled over; but there is no reason why the braid should not be sewn on by the machine instead of by hand. In doing this, place the braid on the chalk-mark of the cuff and sew it on, less than the half, on the bottom side, keeping it a bit tight.

In the cheaper-class trades the braid is stitched over instead of being felled. This is done by stitching the braid on its first edge with fine silk and a small stitch. When pressed it is hardly to be distinguished as to whether done by hand or machine.

The sewing on of the braid depends upon the width required when finished. If when finished it has to be more than half, then a narrower seam must be taken.

Some customers prefer a piece of braid at side of cuff, but no button cuff; when this

is the case, before seaming the braid on the cuff, stitch a piece of braid at side of cuff, as dotted lines, Diagram 41.

See that the braid is level with the edge of topsleeve ; leave out at cuff about ½-in. of braid ; open seam as shown on diagram ; push braid under and re-sew. If the sleeve lining is felled in instead of sewn, the same ½-in. of braid should be left out.

When sewing up the hindarm the wrong side of the stitching of the braid will be the guide as to what width seam is required, so as to give the same width of braid at side as on the cuff. The top part of the braid at the side should go in between the braid of the cuff.

If a button cuff is wanted, and the braid is felled over, then sufficient length of braid should be left out at topside for the tailor to complete the sleeve. If the braid is stitched down instead of being felled, and no pleat has to be made in the braid at the top point of the cuff, then a different method must be adopted.

The cuff, with the piece A, is in that case basted raw edge instead of being sewn under and basted out. The piece of braid at the side is stitched on the wrong side of the topsleeve, the edge of the braid being level with the edge of the sleeve.

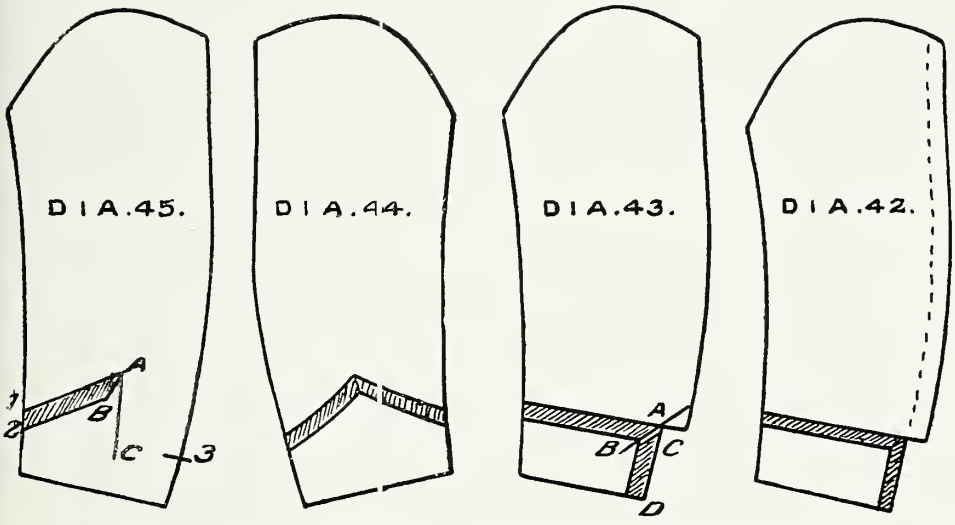
Leave out ½-in. of braid at cuff to finish off by hand. Cut more than half of material away at side, where braid has been stitched, then stitch braid on the right side according to the foot. Sew braid across cuff and stitch down ; stitch a couple of inches of hindarm and tack cuff.

Should a pleat in the braid be required at point B, Diagram 40, then the braid must first be sewn on the cuff and stitched, leaving out sufficient braid for the side ; then form the pleat and stitch the braid at side on the right side of a sleeve ; a portion of the side is then cut away by the tailor and the braid felled on the wrong side, and a couple of stitches given at the point, or cushion.

The piece at the cuff also has to be finished by hand. The cuff is then completed, and tacked as a stitched cuff.

FLAT-BRAIDED BUTTON CUFFS.

The types of sleeve-cuffs above named are not so easy to make as the ordinary stitched ones, especially the formation of the cushion, or the point at the end of the cuff. But having overcome the difficulties of making bound and corded cuffs, the flat-braiding by machine should not prove at all hard to accomplish.



MILITARY POINTED CUFF, FLAT BRAIDED TO BUTTON.

Diagram 42 represents a flat-braided button-cuff sleeve, and the dotted lines are the second to be sewn when ready for tacking.

Diagram 43 illustrates the outline of how to proceed to make it up. The undersleeve is purposely omitted in order not to confuse the reader, but of course the machinist commences to stitch the braid on the undersleeve at the chalk-mark.

The right-hand side of the braid goes on the chalk-mark, so that the second row of stitching is towards the bottom of the cuff, and not above the chalk-mark.

To commence, the sleeve of Diagram 43 has to be made up as though for a stitched button cuff, but when basting out the side of the cuff the piping of the facing should be on the right side of the sleeve instead of the reverse, as in stitched button cuffs. The reason for this is that when the braid is stitched on the wrong side of the button cuff, where the holes are, it has a much neater appearance.

Proceed to stitch the braid on the cuff, beginning on the undersleeve, and stitch it up to point A, Diagram 43.

Measure the width of the braid from line C to B, and make a chalk-mark. Then stitch the second edge of the braid, commencing from chalk-mark B.

Next comes the formation of the cushion, or point, which is rather difficult at first. However, turn the braid back at point A, but have the edge of the dent of the braid level with line C, and stitch down obliquely, or slanting from A to B. Then turn the braid back, as that has already formed the cushion, and stitch braid down line C, also the other edge of the braid.

Leave out at D about ½-in. of braid to finish off by hand, then complete, finishing sewing the hindarm and tacking cuff as described in a previous article dealing with button cuff.

In this case the sleeve is tacked on the right side by stitching in the seams A and B, which become invisible by rubbing the braid at that part with the thumb nail.

To those about to undertake this important work of flat-braiding, the idea of forming the cushion or point may be first worked out on paper.

Take a piece of white notepaper ; cut it the width of the braid, also the length of the cuff ; turn the paper back at point A B C ; make an indentation and bring it over as if you were going to stitch it down. Do this several times until, by repetition, expertness is obtained in forming a clean point, as shown on Diagram 42.

MILITARY BRAIDED CUFF.

We now come to another kind of braided cuff, Diagram 44. This form of braiding is associated with the military, bandsmen, cinema attendants, and uniforms generally.

Diagram 45 gives the outline. When the cuff has been marked, a chalk-mark should be made in the centre, as line C, Diagram 45. Measure the width of braid from line C to B, then make a chalk-mark.

In this type of braided cuff no braid is put on the undersleeve, so the stitching is begun at 1 and continued to A. Break off top silk and stitch braid from B to 2. Turn braid back, but bring level with centre chalk-mark, A C, and whilst in that position stitch down from A to B, slanting as illustrated. Then bring braid back, having thus formed the cushion to line 3, and stitch down braid both top and bottom.

No tacking is required, therefore the sleeve is finished as a stitched one. If the instructions given are followed, the result is a pointed braided sleeve, as shown on Diagram 44.

The method of practising with paper this pointed braiding, before working on the braid proper, may be resorted to in order to gauge the way of obtaining a centre point.

This sleeve is more difficult to make than the flat-braided button cuff, but does not present an insuperable obstacle. It does, however, require a great amount of practice, which can be done on any piece of waste material that chances to be lying about the workshop. The difficulty arises owing chiefly to the different width of braid, because, as the braid becomes narrower or wider, the slanting as from A to B has to be varied. These various degrees of angles can only be gauged by constant practice, and paper of different widths representing braids may be prepared and experimented upon extensively.

This concludes the chapters on sleeve-making, but by no means exhausts the subject. However, sufficient has been said to enable the learner to overcome the initial stages of this section of garment making, and if the instructions are faithfully followed a certain expertness must be acquired as a consequence.

LINING MAKING.

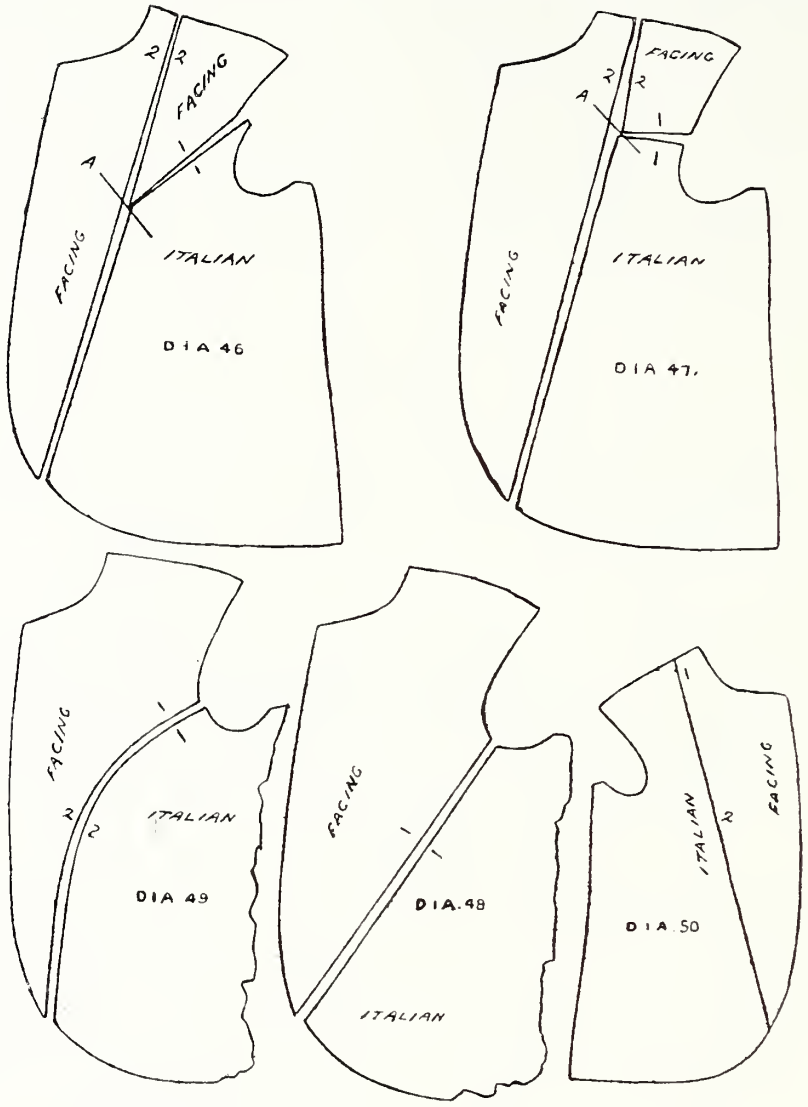
The next stage in garment making by machine is the making of linings. To do this without the aid of any basting is a different thing altogether to the method employed by the tailor, as distinct from the machinist.

The practical tailor, by reason of his having to baste under the coat himself, knows where the facings have to be fulled on, but the machinist, having no practical knowledge of hand tailoring, must be taught the relation between the lining and the outer garment, in order that when the tailor bastes the lining under it shall fit without any trouble. Expensive alterations and even kills have ensued frequently through the tightness and indifferent lining making, or the improper sewing on of the lining to the facing. It is not sufficient to simply sew the lining on to the facing; it must be done in such a manner that the lining shall fit.

The average machinist has little or no knowledge of how the fronts of the fore-parts are worked up, although it is necessary that he or she should know how to make up the lining so that it shall fit after the fronts have been worked up.

In present-day subdivision workshops, even in some of the best-class trades, each section of workers only concerns itself with the particular branch upon which it is engaged, irrespective of the relation it forms to the next stage in the making of the garment.

Although subdivision of labour is adopted for reasons of economy, and to accelerate the process of production, there should be underlying this principle a higher sense of duty and obligation on the part of each sectional worker in order to ensure harmony between one process and another in putting the garment together. In other words, one section, while working, should have in view the work to be performed by the next section.



FITTING UP.

Linings are often badly made, and will not fit the garments, through the imperfect piecing together of the facing and parts of facing to the lining.

The tailor, or fitter-up, as he is called, has to cut his facings according to the material at his disposal. There is no hard-and-fast rule or special nethod how to cut the facings; the fitter-up must use his own judgment in the matter.

As an illustration of this, in the present chapter, five different methods of fitting are given, and for each of these different treatment is required in the making up.

A glance at Diagram 50 shows that the facing consists of one piece, and we propose to describe how to sew this on without basting. To some it would appear that, because it is in one piece, a plain seam without any variation is all that is required, but it is not so.

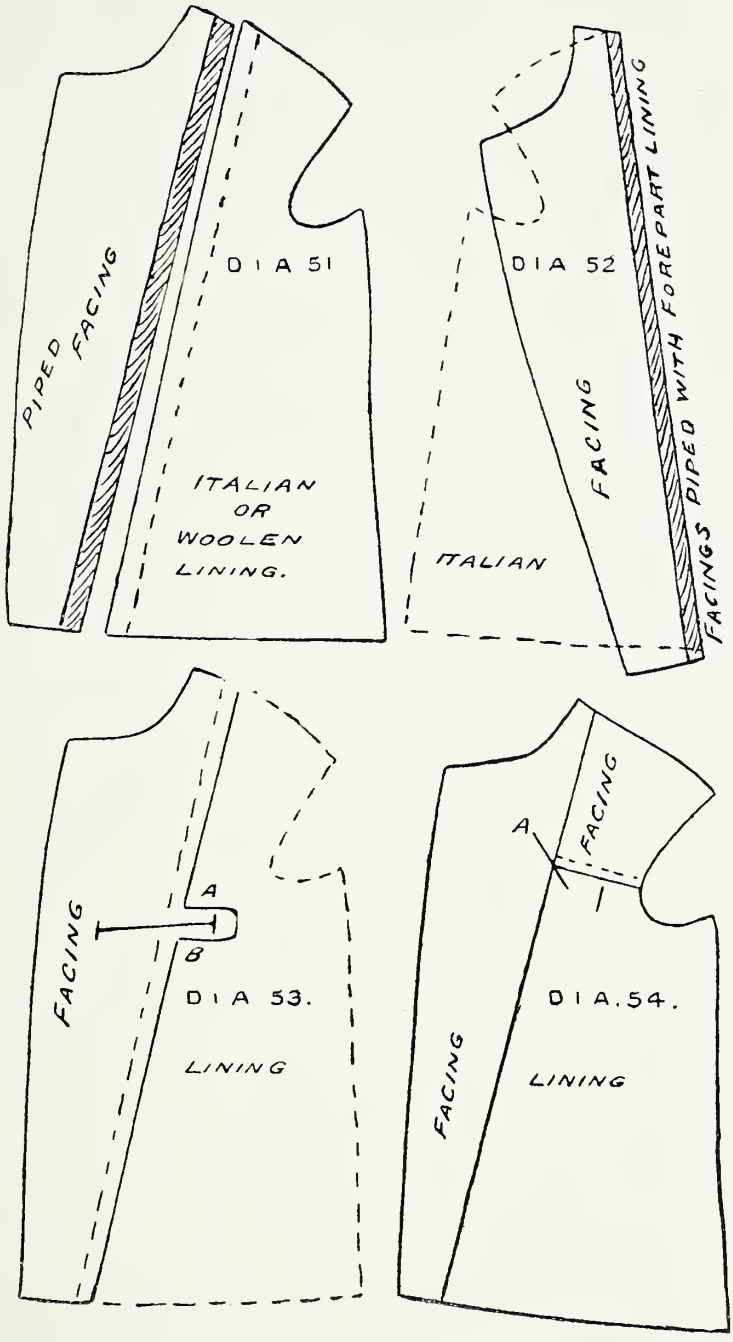
Diagram 50 represents the left facing, but it is advisable to begin with the right one. Placing the facing on the wheel, the italian on top, and begin to sew.

From point 1 as far as 2, the latter of which is about 2-ins. below the scye, the italian has to be slightly fulled on. From point 2 and towards the bottom the lining should be kept somewhat tight, and about 4-ins. from the bottom the facing should be fulled on in a similar manner, and in the same degree as the lining was fulled on from 1 to 2.

The reason for fulling the lining on from 1 to 2 is because that part has to go over the round of the shoulder, and sufficient scope must be given there to prevent any contraction.

If this surplus is not allowed on, and the lining basted under, the shoulder on the outside will be full of wrinkles, and no amount of pressing will get rid of them.

The fitter-up, if he knows his business, and has a knowledge of tailoring apart from his particular section, will allow for this extra lining to be fulled on, and to be certain that the lining has been fulled on—which is not discernible after pressing—he will notch both facing and lining at the parts where they should go together. Special instructions ought to be given to the person who bastes the coat under to look for these notches before proceeding.



This will save much trouble when the garment is finished.

Now turn to Diagram 46, where the lining and facings are cut in three pieces. Some machinists sew the facings 2 to 2, and then the lining to the facings; this means that a corner has to be sewn in, as shown on line A, Diagram 46. This, however, is not a difficult corner to sew in, as it is fairly on the straight, but unless great care is paid to it a tightness will result at this point which is detrimental to the proper fitting of the lining.

Another machinist, in order to try and avert this tightness, when sewing on the lining at that point will full it on there, with the result that, when turned over on the right side the lining is puffy at that point, which pressing cannot get rid of. If the lining is twill instead of italian, the defect is more pronounced.

Now all these unsightly things and mistakes may be avoided by adopting a more simple method of piecing, obtaining the desired result of preventing contraction of the shoulder.

First sew on lining to facing 1 to 1; then sew from point above 2 to the bottom, fulling in both facing and lining as described for Diagram 50.

For pressing open the facing, notch on the wrong side where the facing connects the lining at point line A; this not only ensures a clean corner, which looks as if it was grown on, but it also affords the opportunity of fulling on the lining so as to fit the outer garment.

Diagram 47 illustrates another method of cutting the facing. When the facing is first pieced as from 2 to 2, the sewing on of the lining and getting a clean corner becomes more difficult than in the case of Diagram 46. The simplest method, therefore, is to join 1 to 1 first, and then sew on the facing and lining as described for Diagram 46. Everything becomes more simplified if initiative is adopted.

Diagram 48 has only one piece of facing, but notice how it is cut. This necessitates the lining being cut on the bias, hence different treatment is required. In this case, when sewing on the lining to the facing more fulness should be allowed; but gradually as the lining, as for Diagram 50, all the way down. If this is not allowed the whole outside forepart will contract, and be twisted. If the fitter-up takes the precaution of allowing $1\frac{1}{2}$-ins. of lining at the bottom for this purpose he is on the safe side. He should also make a zig-zag mark with chalk on the facing, to indicate what it refers to, in case the inexperienced machinist should forget. Nothing should be left to chance.

Diagram 49 is similar to Diagram 48, but it will be observed the fa ing of the former is cut round instead of straight. In this case an extra amount of fulness is needed from 1 to 2, and less from 2 to the bottom, as the lining is on the bias all the way down.

When the lining is turned on the right side it will be as smooth as though no

fulness were there. These points are worth bearing in mind.

Some firms prefer the linings raised over on the edge, after being sewn on to the facing, as described in the last chapter. This is done in order that the lining should lay smoother, and it certainly is an advantage in stouter italian or twill.

If raising is required it should be done on the edge of the lining as far as possible, with silk and a very small stitch. In the highest class trades where machine work is not resorted to, the lining is not raised, but is sewn on by the machine. An expert machinist will raise the lining on the facing without first sewing it on, and this is done by placing the facing on the bed of the machine. The italian is turned in an eighth of an inch and then raised.

Whilst this method is a saving of time, it can only be done satisfactorily when the facing is cut on the straight. Where the facing is cut round, and the lining on the bias, it is not safe to raise the lining without first sewing it, although it is somotines done. Such a course of procedure, however, is not to be recommended. It is better to take a few minutes longer and do the work properly ; it saves ripping and doing the work over again.

PIPED FACINGS.

The Diagram illustrations represent piped facings, which are chiefly seen in connection with overcoats. Sometimes the piping is of silk, while the forepart may be of italian or woollen.

Diagram 51 shows a piped facing with silk, done without basting. The silk is sewn on the facing, commencing from the top if it is the right lining, and an eighth of an inch seam is sewn. This should be kept somewhat tight when sewing on, all the way down. The silk is then turned in and stitched down in the seam previously sewn. The stitching should be done according to the eye, as by so doing it is possible to get closer to the seam. Of course, this means that the facing would rest on the table whilst the piping is being stitched, after which the facing is basted to the dotted lines of the lining, and the piping stitched down in the centre. An expert machinist would not require this to be basted, providing the lining was chalk-marked first, to prevent one side being wider than the other ; but as not all facings lend themselves to chalking, the safest plan is to baste it on.

In doing this, as well as stitching it on without basting, the forepart lining should be fulled on from top to below the scye, and kept a little tight towards the bottom, as if there were no piping, as just previously described.

Some prefer the piping double-stitched instead of in the centre, as in this case the piping is stitched on the two edges.

ANOTHER METHOD.

Another method of piping represents the piping made with the same forepart lining. This is done by sewing on the lining to the facing the usual narrow seam, then turning the lining in as shown on Diagram 52, as per dotted lines, stitching hard on the seam, then opening it and stitching the piping in the centre. If a double stitch is preferred the centre stitch is avoided, and the stitching is done on the edge.

This method can also be adopted where the facing is slightly cut on the round ; but it requires an experienced machinist to do it with the same lining as a portion of the lining is cut on the bias, and it is necessary to be very cautious how that part is manipulated. Experience and practice alone will give the requisite facility.

Where the facing is not cut in one piece, but has a joining in the shoulder, as depicted on Diagram 54, and a piped facing is required of the same forepart lining, the piping can only be on the front facing, and not on the piece of facing marked 1 on the diagram. In this case the facings are joined first, then the lining is sewn on to the facing, commencing at the corner marked A on Diagram 54, leaving the piece of lining open on the line marked 1. The lining is then turned in as on Diagram 52, and the piping and stitching finished as previously described.

On Diagram 53 the reader will notice a piece of the same material as the facing, marked A and B, attached to the facing or cut in one with it. Sometimes, where economy of material is practised, this piece is joined on to the facing. This is done chiefly in overcoats, of course, for the inside breast pocket to be put in the cloth instead of half in the cloth and half in the lining, principally in heavy meltons and on raw edge work. In some cases, and in the better-class work, where the lining is of silk—and, of course, expensive—and to prevent it being cut about by putting in breast pockets, the method of leaving on a facing, as shown on Diagram 53, is invariably adopted.

These facings, as a rule, are also piped with silk of the same kind ; therefore the silk is sewn on from top of facing to point A, a small pleat is made of the silk, one-sixteenth of an inch, and sewn round to point ; then a similar pleat is made, and finished to bottom. When sewing from A to B the silk should be eased a little ; then turn in the silk as per Diagram 51, and stitch in the seam. No basting is required for this. It is finally smoothed out with a cool iron, and basted on to the forepart, as per dotted line, either in the centre or double on the edges.

Before putting in the breast pocket (which will be dealt with at a later stage) the silk must be cut away underneath the facing where the breast pocket is marked.

SHOULDER PADDING TREATMENT.

After the lining has been sewn on to the facing, and before the breast pocket is put in, the shoulder padding has to be stitched out, of which three designs are illustrated herewith, these being generally adopted.

In the higher-class trades little shoulder-padding is used, and what is used is not stitched at all ; the padding is worked out by hand to the horsehair and canvas. In the medium and lower-class trades the padding is stitched on the facing.

Diagram 55 illustrates one design.

To proceed, first measure off 2-ins. from the shoulder-point and make a chalk-mark ; then measure 1-in. from neck-point on shoulder line. Next draw a line 6-ins. in length ; slanting as from A to B, Diagram 55 ; then measure off 1¼-ins. from shoulder-point on line A and B, and commence to stitch from that mark to C.

Break off top silk, and commencing on line A B, stitch each successive row 1-in. in width until point B is reached.

The shoulder padding must cover the whole of the stitching underneath the facing.

Diagram 56 portrays another design. This is done similar to Diagram 55, and when finished half-inches are formed, commencing from the shoulder-point, and without breaking off the silk.

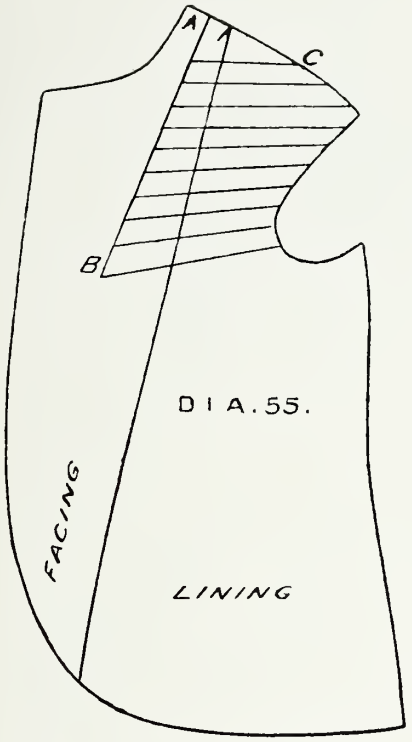
A pause must be made at each line when the foot is raised, but not the needle, and complete until the last line is reached.

Simple as these straight lines may appear, care however must be taken that the facings are not allowed to be fulled on, and, moreover, the padding must not be fulled on likewise. Although fulness may be pressed away before the lining is basted under, it shortens the facing, besides forming creases on the front shoulder, as the fulness of the facing re-appears after a time.

Diagram 57 illustrates another style of shoulder stitching. About half-a-dozen or more half-circles are stitched on the shoulder-point, commencing from A to B, and then filled in.

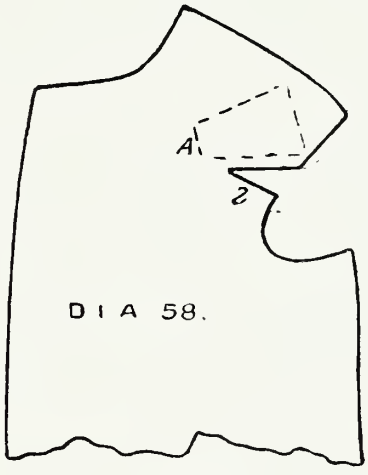
VEE TREATMENT.

Some firms insist upon having a piece of wadding between the facing and the padding, and stitched with it. In all bespoke garments, and in the better-class ready-mades, a vee is inserted in the facing in order to give ease at front of scye when the armhole is basted round. This

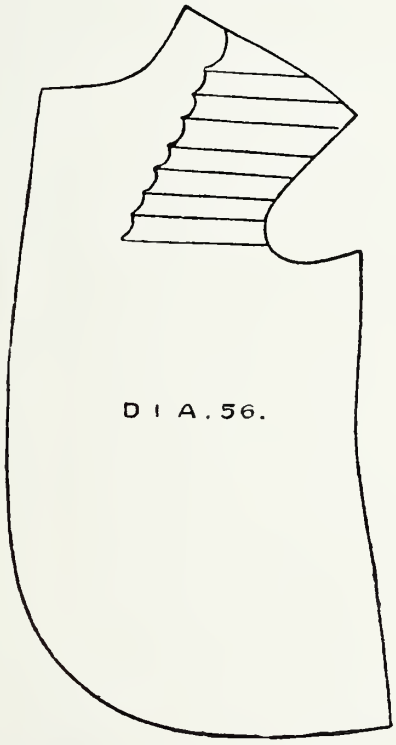


DIA. 55.

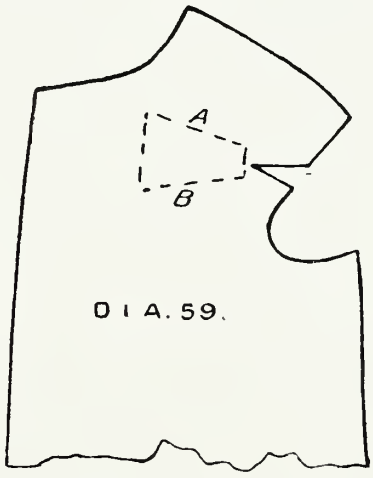
DIA. 57.



DIA 58.



DIA. 56.



DIA. 59.

is done midway between the shoulder-point and scye, when a cut is made through the facing and padding about $1\frac{1}{4}$-ins. in depth. When opened it represents, after the vee has been inserted, the outline shown on Diagram 58.

In the better-class trades the vee is felled on after the armholes have been basted round, and whoever fells the sleevehead does this work. Invariably, however, the vees are inserted by the machine, which saves a great deal of hand labour, and with equally good results.

The vee is first cut 2-ins. in width at one end, and $\frac{3}{4}$-in. the other, $2\frac{1}{4}$-ins. in length. All this is not required, but it is much safer that a little over $\frac{1}{4}$-in. should be left out at the armhole to allow full scope for shaping. As a rule the machinist cuts the vee himself. There is no particular reason for this except that such a small piece of italian is likely to get lost if the fitter-up has to do it, as he places a larger piece of lining amongst the other pieces for making up.

There are two ways of putting in the vees, both of which are the same in effect.

The dotted lines on Diagram 58 represent the vee to be inserted. Place it on the facing with the wrong side of the italian up, as shown on the diagram. Begin to sew an ordinary seam from 1 to A. At A, turn in $\frac{1}{4}$-in. and stitch it down; then bring over the other side of the italian to line 2; turn it in and stitch it down within $\frac{1}{4}$-in. of the edge of the cut, and without breaking off the silk, stitch the vee round on edge so as to be uniform.

The alternative method is depicted on Diagram 59, the dotted lines representing the vee.

First turn in $\frac{1}{4}$-in. on line A and B, and stitch down a little beyond the point as shown. Turn the italian towards the armhole; turn in each side and stitch round on edge. The opening on both facings where the vees are inserted should measure alike. The vees are cut on the double to ensure that they are both the same measurement, and when the cut is made in the facing to receive the insertion that too should be cut on the double by placing the two facings together to ensure the same length.

The vee should not be cut from italian cloth that is on the bias. In the case of a woollen lining it is not necessary for the vees to be the same. If the outer material is of a dark colour the vee should be of black italian; if a lighter shade, a piece of italian to match will serve the purpose.

It is always preferable that the vee should be of a darker shade than the outer material if it is a woollen lining, otherwise the effect is not pleasing to the eye.

Whatever goes out at the armhole should not be cut away by the machinist; this should always be done by the person who fells the sleevehead, and can be cut round after the armholes have been basted round.

Inside breast pockets are put in after the insertion of the vees, and this section of our subject will be next dealt with.

INSERTING INSIDE BREAST POCKETS.

When the facings have been pieced up, and the lining sewn on to them, shoulder padding stitched, and puffs or vees inserted, the foreparts are then ready for the putting in of inside breast pockets.

Of the latter there are four kinds, viz., the plain, double piped, raw edge, and slash or American pocket, which has a welt top and bottom of the same material, but is not made like an outside welt pocket.

THE PLAIN POCKET.

Let us take the making of the plain pocket first. Diagram 60 shows the forepart lining and facing, and the line marked A is where the breast pocket is inserted. For the purpose of the plain breast pocket only one piece of pocket facing is required, which is of the same italian or of the material of the outer garment. This facing is sewn on, on the underneath part of the silesia. That part of the silesia is then placed on the machine, with the point from the operator, as shown on Diagram 61, and stitched on to the portion of silesia marked 1, the italian facing and the italian turned in. This should be 1½-ins. in width, and when stitching on should be level with the top of the pocket.

Having done this, the lining should be placed right side up on the machine, with the sideseam towards the operator, and the shoulder towards the wheel of the machine.

The breast pocket should be marked with chalk 6-ins. from the shoulder point, 2½-ins. from the front, and the length of the pocket-mouth 5½-ins. It should be marked towards the shoulder and proceeded with as follows :

Place a piece of linen under the forepart about 1-in. in width, and to cover line A at full length (Diagram 60). Place the silesia, marked 1, with the facing on it, on the chalk-mark, with the wrong side up, leaving out ½-in. over the line A, and sew the length of the chalk-mark.

Tack ends at the commencement of sewing, and at the other end break off the silk and bring lining forward as before.

Now take the other half of the silesia, marked 2 : turn in ½-in., and with that upwards place underneath line A ; turn over surplus of silesia, which was sewn on, and keep that back with the right hand, and sew on the forepart, part 2 of the silesia, on the edge of that, from point to point, as silesia No. 1, and ¼-in. from top-sewing ; then cut open the pocket-mouth in the centre, and within one-sixteenth part of an inch from end to end. Now turn in the under pocket and stitch a narrow swelled edge according to the foot. Break off the silk.

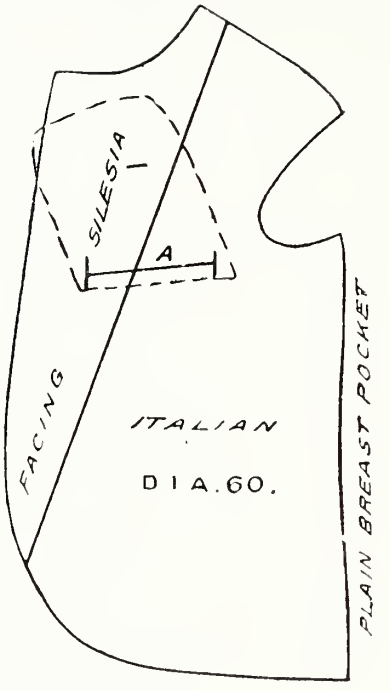
Turn in the other half of the pocket, bring it downwards, and bring up the surplus previously left out when sewing on.

See that everything is smooth on the wrong side, and, commencing from the facing side, tack down a ¼-in. each way ; stitch round half circle, then along the top, and complete that corner as the previous one.

Diagram 65 explains the meaning of the stitching. The dotted lines represent the stitching out of the pocket. The pocket is then sewn round, and this should be done with thread.

The object of cutting open the pocket-mouth one-sixteenth of an inch less on either side is to prevent the corners from ravelling out where the silesia is turned in for stitching.

If the full length of the pocket-mouth is cut open you will have the italian fraying out at one corner, and the cloth at the other, and no amount of touching up by hand will make a clean job of it. Besides, it weakens the strength of the pocket, whilst the other method described obviates this.



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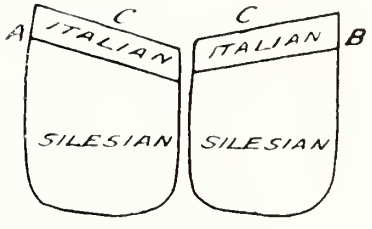

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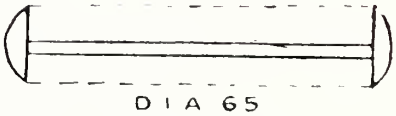
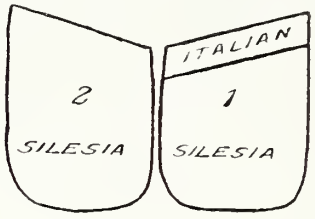

DIA 65

DUAL-PIPED BREAST POCKETS.

In the making of a double-piped breast pocket, as shown on Diagram 62, two facings are sewn on as illustrated. That is to say, one point of the silesia from the operator and the other towards him. A is brought over to point B, and a seam sewn ½-in. in width from the top of the silesia ; then it is opened as shown on Diagram 63, when it is ready for sewing on to the forepart lining. The forepart is placed in the same position as for the plain pocket. A piece of linen is first put under the chalk-mark, and with the point of the needle towards the armhole, as shown in Diagram 64, the sewing is commenced.



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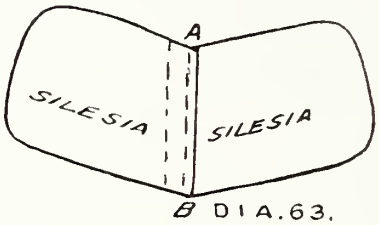

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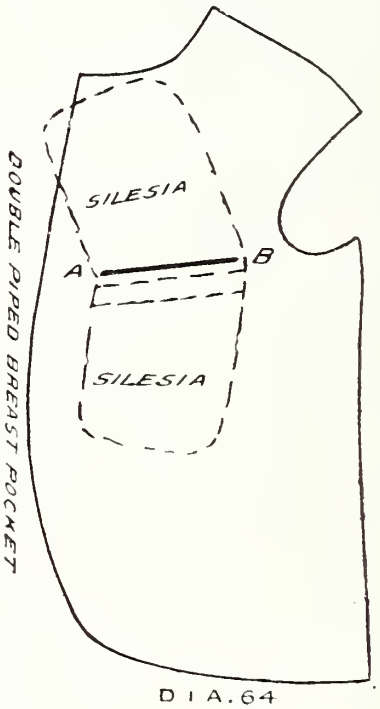


DIA.64

Line A B, on Diagram 64, represents the seam, as previously sewn together, on line C, Diagram 62.

To avoid confusion in this matter of piping it will be best to confine our remarks to Diagram 63. The thick line is the seam of the two silesias. When this is placed on the lining (Diagram 64) the stitching is from A to B, as per dotted lines, underneath the thick line, one-sixteenth of an inch from the thick line. That forms the piping. Underneath that, as per dotted lines on Diagrams 63 and 64, $\frac{1}{8}$-in. apart, another row is stitched, then cut open in the centre.

The top and bottom pockets are brought through the pocket-mouth, the bottom one pulled down, and the top half lifted up towards the shoulder. The under pocket is then stitched out according to the foot, leaving out a narrow piping similar in width to the top, which has already formed itself, it being the difference between the dotted and thick lines, as Diagram 63.

To proceed, the silk is broken off, the top half is pulled down to meet the other, and the surplus lifted up, which was sewn on line C, Diagram 62. The corner is stitched down as in the plain breast pocket, as mentioned in connection with Diagram 60. The half-circle is formed as indicated on Diagram 65, the top stitched and the other half of the circle completed, and the pocket sewn up.

The width of stitching out the bottom and top piping is a matter of fancy. Some prefer the stitching underneath the piping, on the edge of the seam, and where this is done the top part has to correspond, but the finishing of the half-circle must be done much wider, otherwise it looks unfinished.

Not a few firms prefer, in the case of overcoats, that the top part of the facing should be of the same material as the garment; in that case cloth is substituted for italian, but the piping should be made wider to correspond with the heavy nature of the material. Where cloth is used, and the facing is too thick for turning in, stitching on the raw edge would cause it to fray out, therefore a simple device is adopted to overcome the difficulty.

The material is placed on the silesia, and the lower part of the pocket brought over until it reaches the cloth, then a narrow seam is sewn. The other half is Italian, and the two sewn together as previously described for Diagram 62.

In Frock Coats with silk facings, and where the breast pockets are put in the silk facings, it is unusual to show any machine stitching whatever in making the inside breast pocket, with the exception of the side-tacking, so as to represent the pocket being put in by hand.

In this case the dotted lines on Diagram 63 should be sewn $\frac{1}{2}$-in. from the thick line, A B, and the second line of stitching should be $\frac{1}{4}$-in. from that. After cutting open in the centre the underneath piping should be formed the same width as the top, and stitched in the seam both top and bottom.

As the width of the piping necessitates a wider opening, the sides should be sewn under, thus obviating any stitching on the right side which would be visible.

RAW EDGE INSIDE BREAST POCKET.

The raw-edge inside breast pocket can only be made up in material which lends itself to such treatment, and in cases where the front edges are made up raw. The facings must be cut in one piece, as shown on Diagram 67, or as on Diagram 69.

This breast pocket is put in differently to other inside pockets. The pocket-mouth is not cut open either at the commencement nor during the process of making, and it need not be cut open until the garment is completed.

The process of making this pocket is as follows: Place the facing, right side up, with the sideseam towards you, and the shoulder towards the wheel; then place one-half of the pocket, which has no pocket facing, under the facing, not on it, in the position as depicted on Diagram 67.

A to B is the chalk mark for the pocket-mouth. Then, under the silesia place a piece of linen to reach the full length of the facing. Now stitch the first row from B to A, not on the chalk mark, but as shown by the dotted lines on Diagram 68.

Break off the silk; pull the silesia down towards the bottom; see that everything is smooth on the wrong side, and stitch the second row, as shown on Diagram 68, as per dotted lines. Turn the facing over on the wrong side.

Take the other half of pocket, which must have a pocket facing of the same material, and place it on the half already stitched down, and $\frac{3}{4}$-in. above the pocket-mouth, or the chalk-mark, B and A, and sew round the pocket. Then place the facing right side up and stitch the first row above the thick line, on Diagram 68; break off the silk, and now place a piece of linen between the pocket facing and silesia, leaving out an inch at each end, and stitch second row as per dotted lines on Diagram 68. Tack down the side marked A and B; complete the half-circle and finish the other side in a similar manner.

It is very essential that all ends of silk or thread should be cut off close, so as not to leave any ends for the tailor to cut off. Always practice a cleanly habit in finishing off ends, otherwise you will get a bad name as a careless machinist. Besides, it is for the machinist's own protection to cut off the ends, because if they are left on the tailor, or whoever will brush off the garment will, instead of cutting them off, pull them, and, in doing that, will open stitches. Never leave any part of your work to be finished by another person, however apparently small and insignificant the item or service may be.

Diagram 69 is another form of facing, not cut in one piece, but where a tongue is serged on to the facing, or, if preferred, left on at the discretion of the tailor. This style of facing looks artistic, especially when piped, and, moreover, it gives added strength to the pocket-mouth.

The process of making the inside breast pocket is similar to that explained in connection with Diagram 67, and finished as Diagram 68.

AMERICAN INSIDE BREAST POCKET.

The making of the American inside breast pocket, or "slash" pocket as it is sometimes termed, next comes under consideration. It is a little puzzling and difficult at first. The difficulty consists of grasping at first sight the method of making it, and is further augmented by the fact that the pocket-mouth is first cut open, and the sides notched; so if any mistake is made in the notching or making it will necessitate a new forepart lining. It would therefore be advisable to carefully study all the details of this pocket, and learn them off by heart; turn it over in your mind to see whether you have the grip, and then try to make the pocket on a waste piece of lining before attempting the lining itself. The first thing, then, is to prepare the pocket. In this case we have three pieces of facing to sew on to the silesia, the under pocket has one, the top pocket has two.

Diagram 71 is the top half. Proceed to get ready as follows:

Place the silesia with the point towards the needle and the bottom towards the wheel; on that, stitch a piece of material same as the garment, which is marked AA and BB.

Leave out about $\frac{1}{2}$-in. at sides and top, as shown on Diagram 71.

On this material stitch another piece of facing $1\frac{1}{2}$-ins. in width, and take it level with the top edge (this is marked 3 3); turn this in and stitch on edge. This is to form the top half of the welt.

Now take the other half of silesia, with the point towards the left hand, which would be the reverse of the other pocket, and stitch the facing on as shown on Diagram 72, and marked 4 4.

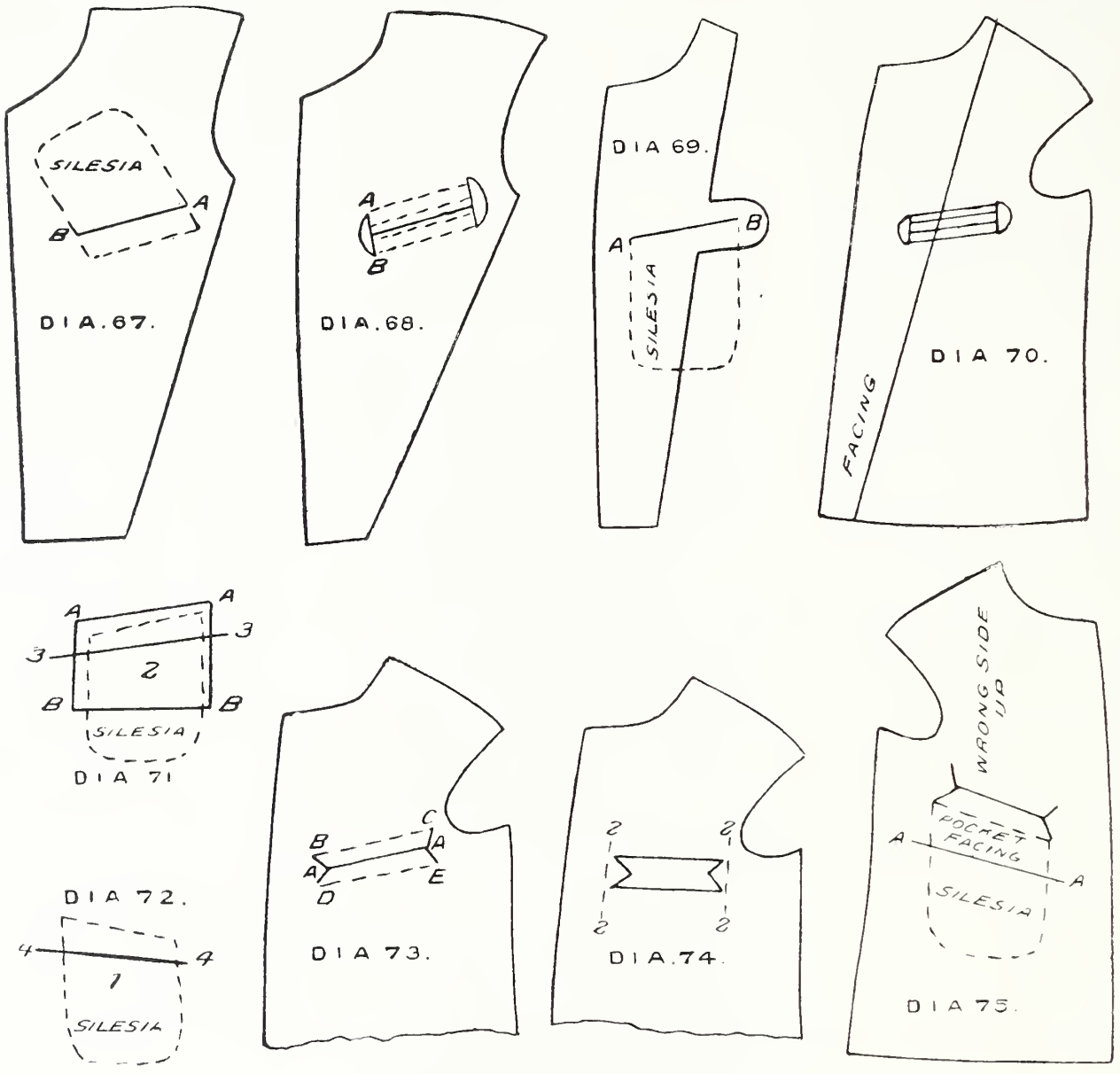
Now look at Diagram 73. AA, thick line, represents the chalk-mark of pocket-mouth, usually $5\frac{1}{2}$-ins. in length. Cut this open from A to A, then notch at sides,

slantwise, ½-in. from A to B, A to D, A to C, and A to E. Draw a straight line with the ruler from D to E and B to C, as shown on dotted lines, Diagram 73. Turn inwards those dotted lines, top and bottom, and you get an open space on the forepart lining, as represented on Diagram 74. This is all plain sailing, so far. Now we come to the actual piecing together, or what machinists call "screwing the pocket up." The following instructions should be carefully followed :

Place the lining wrong side up, with the front facing towards you, and shoulder towards the wheel, as shown on Diagram 75. Take the under pocket (marked 1, Diagram 72), place underneath the pocket-mouth of the lining, the edge of the facing to be level with the edge of the bottom pocket-mouth ; under that insert a piece of linen, leaving out at each side an inch, and sew in the dented lines, as marked on Diagram 75. Break off the silk and turn lining on the right side. Turn in the pocket and facing ½-in., and stitch down on the edge of the lining. This completes the under pocket.

Now turn the lining over again on the wrong side and place the top half of the pocket (Diagram 71), and bring facing 3 and 3 level at the pocket-mouth, with the edge of the under welt just stitched out. Hold it firmly in that position and sew round the pocket. Proceed to turn the lining again on the right side ; place under the needle, and put a piece of linen between the silesia and facing, and stitch down the top part which was indented on the edge as underneath, as the top welt is made the same width as the bottom one.

This fills in all the space as represented on Diagram 74. It is now ready for sewing under the corners, which is accomplished in the following manner : with the scissors-points turn in the points as illustrated on Diagram 74, and sew under the sides on the wrong side, as dotted lines 2 and 2, both sides (Diagram 74). Then tack the sides on the right side of the lining and stitch a half-circle, as shown on Diagram 70, which completes the pocket.



This ensures a very firm and durable pocket, especially for heavy overcoats, and although there appears to be much twisting and turning during the process of making. it really takes no longer to make than the ordinary double-piped breast pocket.

HARE POCKETS.

Another inside breast pocket, distinct from the customary one, is the hare pocket, outlined on Diagram 76. These pockets are generally inserted in shooting coats, but quite a number of persons other than sportsmen affect them. Collectors, commercial travellers, insurance agents, and many other individuals whose occupation necessitates the carrying of a big book, find the hare pocket extremely useful.

The material of which they are made is usually jean, although occasionally they are made up in cloth.

They are either plain or double piped. The width ranges from 9 to 12 inches, and in a Lounge Jacket the pocket-mouth is cut just below the waist line. In a shooting coat it is placed 2-ins. below the waist seam. A tab is frequently arranged in the centre with buttonhole as illustrated. This tab, which may be either made of italian turned in or a piece of melton raw edge is sewn with the pocket, if plain, and with the point of the tab to the armhole. If double piped the tab is sewn in when the two parts of the pocket are sewn together. Care should be taken that the tab is towards the armhole when the under pocket is sewn to the forepart for the piping.

As there is a great strain on this kind of pocket, it is necessary that the linen under the pocket should reach, be on the double, and should reach the full width of the forepart from front to back, so that the linen will be sewn with it in closing the sideseam, and the front be fastened to the canvas. In the case of shooting coats the linen should reach the waist-seam to be fastened.

Two points should be observed, and are indicated on the diagram, viz., the corners should be finished off with points instead of half circles, and the pockets should be made as wide as possible at the bottom (see dotted lines).

The stage has now been reached when the lining is ready for closing. Some firms have quilting under the arm, but that subject will be dealt with at a later stage, when explaining sidebody stitching.

Before describing the method of closing the lining and sewing in of the collar by the machine, a few preliminary observations may not be out of place.

In the highest class trades the foreparts are made up separately, and when the coat is closed the back lining is basted in and felled. But in the cheaper trades, and where subdivision methods are resorted to, where the lining is " bagged," the back is sewn to the forepart at the same seam. With some firms this is sufficient, leaving the shoulders and collar to be made up by hand. Other firms, again, have the sideseams and shoulders closed, and the collar only done by hand. Further still, some foremen insist on having the shoulders and collar only sewn by the machine, and the sideseam left open to be felled by hand ; whilst yet further others will have the sideseam, shoulder-seam and collar sewn by the machine. All this, of course, necessitates the accurate fitting up of the lining and collar, so that all shall fit when the garment is basted under. Sometimes linings do not fit the garment, although quite accurately fitted up. This results mainly from the lack of knowledge on the part of the fitter-up, who does not understand the part of the machinist ; but of this more anon.

CLOSING THE LINING.

We assume then, to get on, that the side-seam, shoulder-seam and collar are to be sewn by the machine. The first thing is to take the back itself.

In fitting-up, an inlay is usually allowed on the centre of the back, for the purpose of giving elasticity and freedom of movement. When it is not a whole back lining a plain seam has to be sewn down the centre, as per dotted line, Diagram 77. The difference between the two thick lines of the same back is the inlay, and it will be observed there is a point left on at the top, which is necessary should part of the inlay be required later on. This part of the inlay is sewn with the collar, so a pleat has to be formed, which is done as follows :

Turn the lining inside, with the wrong side up ; place the two sides level and sew down the back, about a $\frac{1}{4}$-in., as far as lines A and B, commencing at points O and O, as shown above the neck, which will be the original width of the back without the inlay. The pleat of the centre of the back, when on the right side up, must always show itself towards the right when the collar is being sewn in ; that means that the pleat at the top of the neck, before the collar is sewn in, has to be turned towards the left on the wrong side. To be safe, the centre of the collar may be stitched on to the centre of the back, which will be the edge of the pleat on the right side. This should be done with a couple of stitches, just to keep it in position.

In closing the sideseam the right forepart should be operated on first, as the scye section has been reached, and it enables the machinist to see how much goes out at the bottom, which serves as a guide for the left side.

It sometimes happens that the back lining is cut longer than the forepart for safety. If the forepart has an inlay, as is usual in all bespoke work, the lining will also have an inlay, marked by the fitter-up, on the right side of the lining. This inlay is shown by the dotted lines on Diagram 78.

The right side of the forepart lining should be placed on the machine, and the back upon it. A point about $\frac{1}{4}$-in. should be left out of the forepart, the same as when sewing up the forearm of sleeve. The edge of the back should come a seam over the inlay, all the way down, so that the actual sewing shall be in the chalk lines.

In commencing to sew the back is fulled on slightly from 1 to 2, Diagram 78, which should be 4-ins. from the bottom of scye. From 2 to 3, say, from the waist line and below, the sewing should be level ; from 3 to 4 (the hips) the forepart should be slightly fulled on. The same remarks, of course, apply to the left forepart.

If the above instructions are followed the lining will be in harmony with the closing of the coat.

With the shoulders, the right forepart again is taken first, the two points being kept level at the shoulder ; that is to say, no point should be left out as at the sideseam, because the configuration is different ; but the back must be fulled on uniformly all the way. If anything goes out at the shoulder-point this should not be taken any notice of, as it is sometimes cut longer than required. The only thing to consider is that the pivots are actually correct.

The other shoulder will be sewn in the same way, commencing at the shoulder-point, and leaving out as much of the shoulder, if any, as was left out on the right side.

The next stage, the sewing in of the collar, is an important one, as the way it is done either makes or mars the garment. Frequently the fitter-up will cut the front part of the collar about an inch longer than actually required. This is done for the convenience of the tailor, or the man who bastes under the garment, and to allow for any emergency that may arise in connection with the under-collar, after the shape has been pressed in. Where this extra inch is allowed on the fitter-up should indicate with a notch for the guidance of the machinist ; but when the notch is omitted, the machinist should sew in the collar as it should be sewn.

In Diagram 79 the shoulder is indicated closed, the dotted lines being the collar for sewing in. In this case the left side of the collar is sewn in first, which serves as a guide for the right side.

From the centre yoke back to the shoulder-seam (1 to 2 on Diagram 79) it is plain seaming, from 2 to 3 being the gorge.

The collar should be slightly fulled on, and from 3 to 4 plain seaming again. If anything of the collar goes out, the same length should be marked off on the other side, indicating same by a chalk-mark, and commencing from there.

As a rule a notch on the facing indicates the length of the lapel, which is about $1\frac{3}{4}$-ins. from the front in a single-breasted coat. Sometimes the collar will be cut short, and not reach the notch in the lapel. When this is the case the machinist should not full on the facing to reach it, but rather full on the back of the lining in order to get the requisite length.

Just a word to the fitter-up:

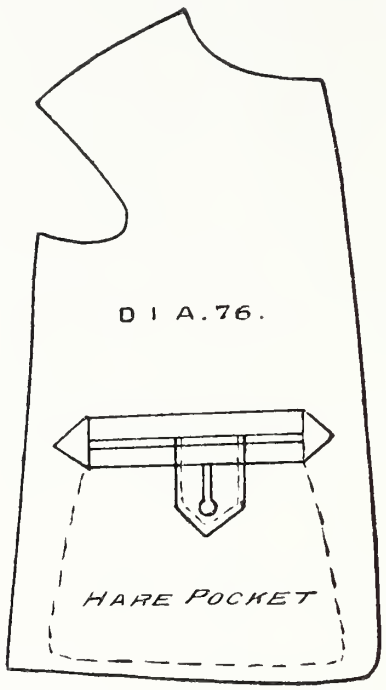
To enable the machinist to sew in the chalk-mark the back of the coat must be frequently lifted up to see whether the chalk line is being strictly followed. This is a waste of time, and a source of some annoyance. The more accurate way would be for the edge of the back to be level with the chalk-mark.

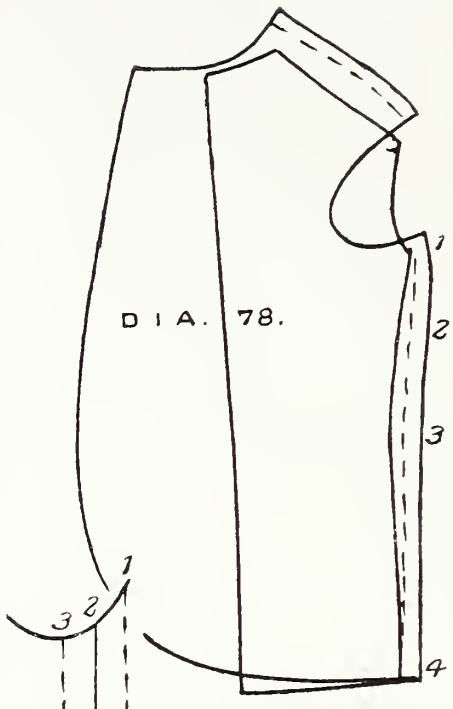
To do this it is necessary for the fitter-up to mark the inlay just a seam beyond the original marking-stitches, so that when the edge of the back is taken level with that mark it is certain that the seam sewn will be in the original marking-stitches.

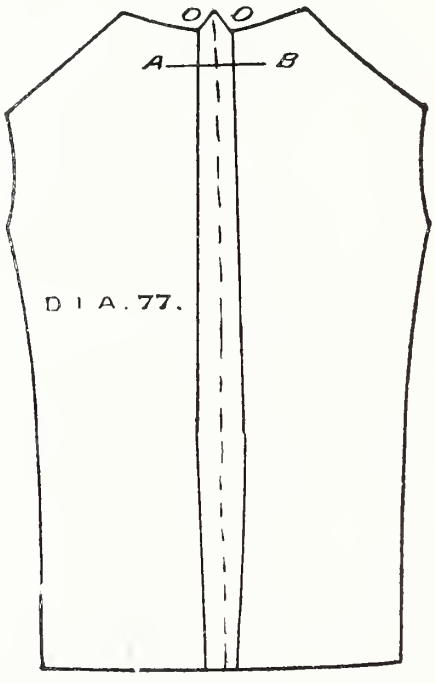
Diagram 80 illustrates and explains what is meant. The dotted line, point 1, represents the sideseam; dotted line 3 is the original inlay; the heavy line, 2, should be the fitter's mark, so when the edge of the back meets that line the seam reaches the dotted line 3 and the machinist is in a position to see how to sew the seam straight.

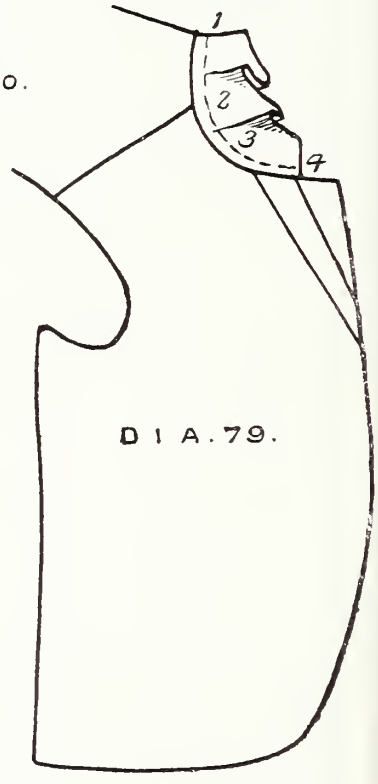
Both coats and linings are sometimes killed because the machinist has placed the edge of the back level with the dotted line 3, on Diagram 80, with the result that the finished garment is too narrow by two seams.

The machinist, anxious to get through the work, does not care to lift up the back each time to see whether the seam is in the chalk line, hence the result. The same neglect applies equally to the shoulder-seam. To obviate this, the fitter-up would be well advised to adopt the suggestions made, and so prevent misfits and kills.









SIDEBODY QUILTING.

The making of Morning Coat linings is somewhat similar to making linings for lounges or overcoats as far as the facings are concerned; but in the former the foreparts and skirts are made in separate parts. The closing of the sideseam in the Morning Coat is, of course, a little more difficult than in the others referred to. This, however, will be dealt with later on, after the subject of sidebody quilting has been exhausted.

A glance at Diagrams 81 and 82 will show that the italian lining is left out $\frac{3}{4}$-in. beyond the facings. This is done because, in almost every bespoke garment, unless it be of the very lowest class, the waist-seam of the forepart lining is fastened to the waist seam of the garment, in order that the lining shall set better. The skirt lining is then basted over this and felled. The surplus is allowed on to afford a margin

for manipulative purposes. As a rule the fitter-up notches the lining, so that the machinist may know exactly how much to leave out.

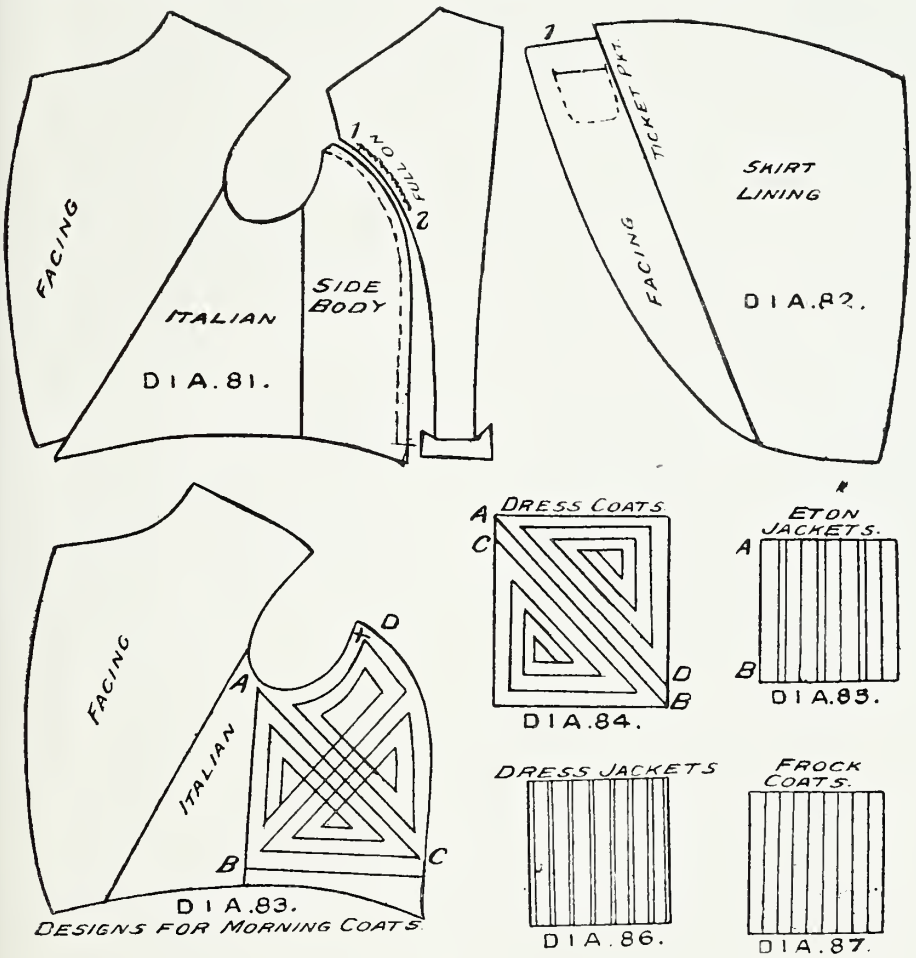
The facing of the skirt is joined to the facing of the forepart, as shown on the diagrams marked 1 and 1.

If a ticket pocket is required in the Inside facing, as shown on Diagram 82, this should be put in before joining, so as to prevent the whole being dragged about in the process of making the ticket pocket.

Place the other forepart on that and press together so as to get the two alike. Then commence to stitch a small stitch with silk, from A to B ; lift the foot up and stitch to C, and then to point D, and break off top silk.

In stitching from C to D, do so within $\frac{1}{2}$-in. from the edge of the lining.

When sewing under the scye and point X is reached, it is well to begin within an inch from the scye in order to permit the cutting away of the lining without



After the facings have been made, the shoulder padding stitched out (if required), the vees and breast pocket put in, the sidebodies are then quilted. Five designs of quilting are herewith illustrated, these being most commonly used.

Diagram 83 represents one centre diamond shape, with smaller ones inside. To make this design, proceed as follows :

Mark off with chalk 4-ins. from the sidebody-seam, towards the forepart lining. Then from the armhole, 8-ins. towards the bottom, apply the ruler and chalk from A to B and to C.

interfering with the stitching of the sidebody, and so cutting the stitches.

For stitching the sidebody design on Diagram 83, commence from A to C and stop within $\frac{1}{4}$-in. from line C and D. Observe how the lines run in the illustration and copy same. Care should be taken that all stops made are the same width, otherwise one diamond will be larger than another, which, of course, would completely spoil the effect. At first glance it looks difficult to do, but by sedulously following the outline of the design it proves comparatively easy. The numbering of the lines by way of direction has been purposely left out as likely to lead to confusion. This design is generally used for Morning Coats. Of course any other design may be adopted, according to taste or judgment.

Diagram 84 represents another design, which is known as "halves." The outline, or frame is stitched round from A to B to C and D, same as in Diagram 83. Line A to B is then stitched, the silk broken off, and re-commenced at C, following the lines. The other half is commenced at D and completed as before.

The width of the stitching is purely a matter of fancy ; $\frac{1}{2}$-in. or $\frac{1}{4}$-in., as preferred. It is well in the case of working for a new firm, to ask to see a sample of their stitching, or enquire what width of stitching is customary. This may save time and trouble later on through not ascertaining this important matter.

The design shown on Diagram 84 is usually adopted for Dress Coats.

Diagram 85 is quite simple in design, yet quite striking and effective. It consists of one straight line, then two lines close together and so on alternately until complete.

After the usual frame work, commence from A to B. Cut off the top silk with the point of scissors, but not the shuttle silk or cotton ; draw that out a bit and commence the next row and do the same. There is no need for breaking off the shuttle silk until the end is reached ; that saves the stitching from coming undone during the process of cutting off the top stitches.

Another little matter is worth noting, and that is, when cutting off the top silk use the point of the scissors for the purpose, and not the middle, as in resorting to the latter the lining is likely to get cut in the operation. Design 85 is used for Eton jackets.

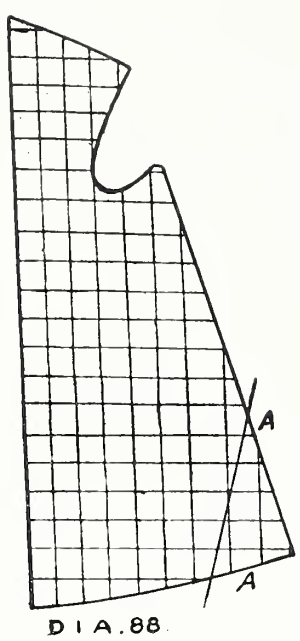
The design depicted on Diagram 86 is very similar to Diagram 85, but all the lines are dual, and the single line is missing. This is generally adopted for Dinner Jackets.

Diagram 87 consists of a series of single lines equal distances apart, and needs no describing. This is used in making Frock Coat linings.

CLOSING THE SIDESEAM.

As will be observed by the dotted lines on Diagram 81, some sidebodies have an inlay in the lining, and where that is the case the back is placed for sewing on the inlay.

Before beginning to sew, a part of the sidebody should be left out to the extent of $\frac{1}{2}$-in., and in sewing from 1 to 2 the back lining should be fulled on gradually until the round or blade-part is passed. From 2 onwards it is plain sewing.



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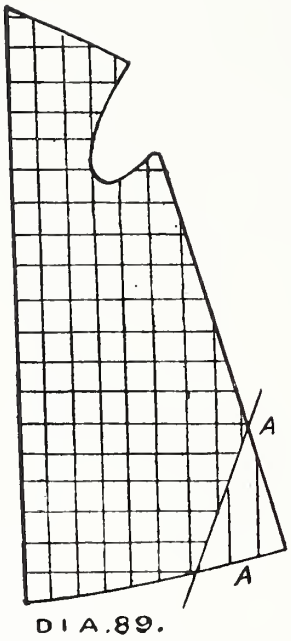

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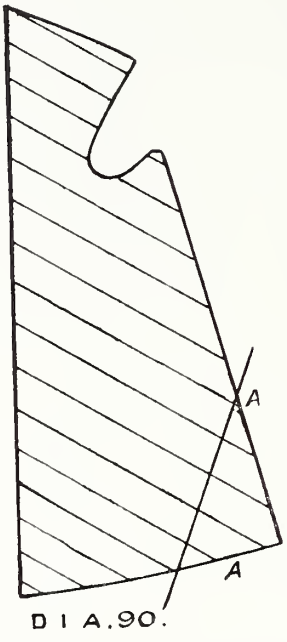

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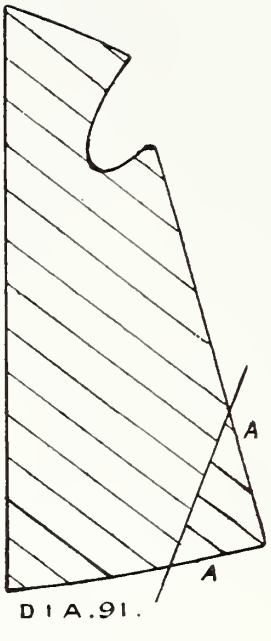

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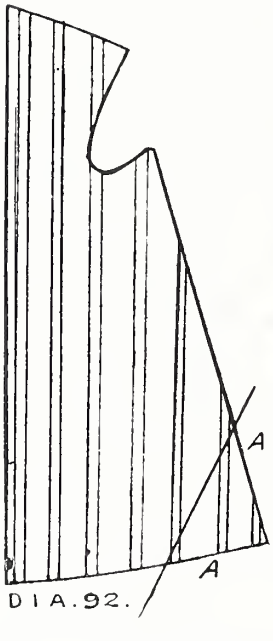

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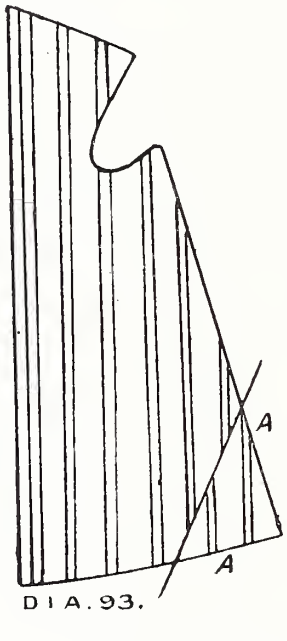

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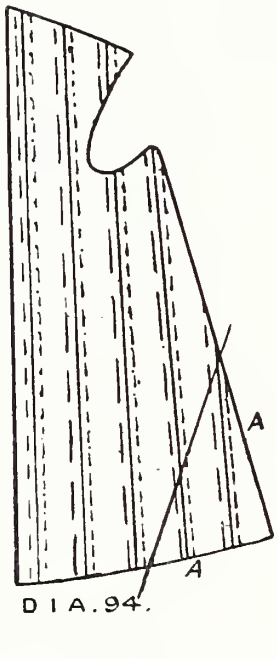

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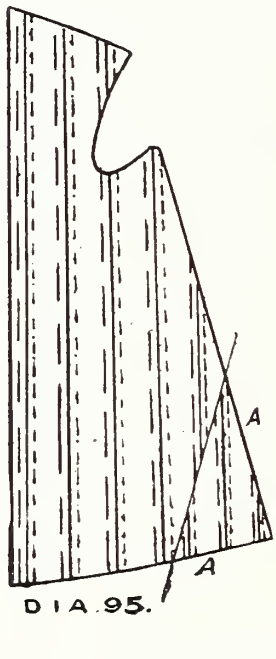


DIA.95.

This inlay does not appear on the sidebody of the garment, but is allowed on the forepart. This, however, cannot very well be done in the lining, because the sidebody is quilted at that part, and in case it were found necessary to let out the inlay, it would be a task requiring patience and equanimity of temper to complete. Therefore the precaution is taken to allow the inlay on the sidebody of the lining, which, for all practical purposes in case of an alteration, fulfils the same end.

SEWING ON "WHEEL-PIECE."

Before leaving the subject of lining making it will perhaps prove of service to describe the sewing on of a "wheel-piece" in a check or striped lining of an overcoat, where the forepart is too narrow and has to be pieced.

This would appear a very simple operation, as it is merely a plain seam, and so it would be is there were no stripes to match. What difficulties, however, do exist in this connection are in the matching of the stripes, without repeatedly having to rip open the seam to get the desired result.

Furthermore, the knowledge of how to sew on the wheel-piece of the many varieties of striped and check linings will be of considerable assistance to the machinist when he reaches the stage of putting in pockets and welts in garments, where the material has a distinct pattern design.

Of course, the art of inserting the wheel-piece is in matching the pattern so exactly

as to give no suggestion of a piece seamed on. This, to a large extent, is dependent upon the fitter-up.

In fitting up the lining the latter sometimes cuts the wheel-piece to fit the forepart, irrespective of how the machinist is going to match the stripes. When this is the case the machinist has to do the best he can to try and get stripe to stripe or check to check.

The proper thing for the cutter to do is to cut the wheel-piece about 2-ins. longer than the correct size, both at top and bottom so as to allow full scope for matching the pattern. This is apart altogether from acknowledging that the machinist should possess the requisite skill to match the stripes.

The extra length to be allowed on the wheel-piece is only to afford the machinist the opportunity of performing his part of the work properly, for without this facility he would be unable to close the sideseam of the lining as it should be done, with the result that when the lining is about to be basted under it will be found it will not fit the outer garment.

Of the almost endless designs, patterns and varieties of check and striped linings for overcoats, space will only permit of a selection of four as illustrated. These, however, should be ample to serve the purpose in view.

The diagrams are, of course, drawn and reproduced in black, but by a stretch of the imagination it should be conjectured that the background is either dark grey, brown, or light grey, whilst the double and single stripes, and the dots and stripes contrast in colour to that of the background ; thus it may be readily understood that if these wheel-pieces are sewn on in any haphazard thoughtless manner, they would be an eyesore, and no particular customer would accept a garment with the lining so "snobbed."

In check linings there are usually as many as four colours, and when the wheel-piece is joined to the forepart and the stripes or lines do not match the whole garment is condemned, no matter how well it may be made otherwise.

It is no unusual thing for some machinists to sew on the wheel-piece three or four times and then rip it off again because it does not match, even though they had matched it, as they imagined, before commencing to sew. It is just here where the secret of correct matching comes in, and which we now propose to describe, for there is a method whereby the wheel-pieces can be properly sewn on and not left to chance.

It is quite a common thing for some machinists to try and match the stripes by laying the wheel-piece on the forepart, matching the stripes at the edges of the wheel-piece, and forepart, but when sewn on and turned over, they are surprised the two do not match. This puzzles them at first. The mistake, however, occurs in the machinist not taking into calculation the width of the seam he was sewing, which, of course, alters the whole position of the stripes when joined.

A glance at Diagram 88 will show that the design illustrated is one of square checks. The part marked A A is the wheel-piece. To sew on a wheel-piece of this design is more difficult than any of the other designs shown, for both vertical and horizontal stripes must be matched.

Diagram 89 illustrates the forepart lining with the wheel-piece sewn on, and the lines matched at the edges. Of course, it looks confusing and patchy. To do the thing properly and get the result shown on Diagram 88, the following method should be adopted.

First lay down the wheel-piece on the forepart lining, and instead of matching the lines at the edges, match the stripes where the seam has to be sewn. This is done by arranging the wheel-piece above the lines of the forepart just as much as the width of the seam to be sewn. This means that the lines will not meet at the edges ; but that does not matter. What has to be attended to is to notice before sewing that the stripes will match at the crossing of the lines, or where the seam has to be sewn.

To sew on a wheel-piece correctly care is necessary, and however short the seam may be the machinist should stop every 2-ins. to see if the lines harmonise, as whilst sewing they may shift a little and need adjusting again.

It might be suggested that the wheel-piece should be basted on for security, but this would be no guarantee of correct matching, and would only hamper the work. By observing that the stripes match at the crossing when sewing the seam, and will not match at the edges, this will indicate the cause of previous failures to accomplish the object aimed at.

Diagram 90 suggests a plain striped design running obliquely across the lining. In this case not only has it to be matched at the crossing, but it is necessary to take a slightly wider seam, say about one-sixteenth of an inch more than usual, in order to compensate for the inclination of the stripe. If this is not done the effect is as shown on Diagram 91.

The rule for the fitter-up to follow is, where the stripes are wider, extra allowance must be made at the top and bottom of the wheel-piece.

A double-line design is outlined on Diagram 92, and of course both stripes must be matched. This is more difficult to sew on than Diagram 90, for example, as at every third stripe the machine has to be stopped, and the wheel-piece lifted up sideways to ensure that it has not moved slightly ; if it has, then the result is something like that illustrated on Diagram 93. Of course, the constant stopping means loss of time, but more time would be wasted in ripping it each time to try and correct the mistake, besides the possibility of cutting the lining in the process.

Diagram 94 has three interwoven dots and stripes of various colours, and if reference is made to Diagram 95, the effect of not knowing exactly how to start placing the wheel-piece in position will be observed.

Each design represented after the first is graded according to the number, from the elementary to the more complicated, each one getting a little more difficult than its predecessor, commencing with Diagram 90. The rule, however, is to match the stripe at the crossing, or where the seam is to be sewn, and not at the edges.

The machinist in a modern subdivisional workshop is the pivot upon which the day's work revolves—he or she is the mainspring of the whole concern. It is in accordance with the capacity of the output of the machinist that the number of the other workers is regulated. Any relaxation on his part means loss to the employer, especially where the weekly wage system of payment is resorted to.

The decrease in output for a particular day may be caused by the machinist doing the last thing first instead of the first thing first ; whilst the other employees are waiting for something to do. This is mentioned because it has some bearing upon what has been said previously.

In this book the making of sleeves and linings was described first, not because they are the first things the machinist who has control of the workshop has to do, but because they are the preliminary stages in acquiring the art and science of working the sewing machine. They are the elementary processes to be gone through before passing into the more advanced and difficult branches of the art.

THE MAKING OF POCKETS.

In lounge jackets and garments of a similar character a fish or vee is usually cut down the forepart from the scye bottom to the pocket-mouth, in order to get the correct shape at the waist. The sewing up of this fish is of great importance, if the result is to be satisfactory, as, although at the first glance it looks like merely sewing up an ordinary seam, it is something more than this.

First of all let us observe how some machinists sew this seam in the way it should *not* be done. These persons begin

from the armhole to sew an ordinary ¼-in. seam, and within an inch from the other end commence to sew half the width of seam or ⅛-in., until tho end of the cut is reached. Sometimes the pocket-mouth has to be cut through this seam, with the result that, owing to it being taken so narrow, it frays out during the process of pocket-making, and is not easy to repair.

To avoid this, and to sew the seam properly, a glance at Diagram 96 may be helpful. The thick black line is the vee cut, and the dotted lines the seam sewn. To accomplish the operation successfully the seam should be sewn the same width all the way down until the end is reached, and then sewn about ½-in. beyond that to nothing. When pressed open this not only gives a clean forepart, but also when the pocket-mouth has to be cut through this, it ensures the seam not fraying out.

MAKING THE FLAPS.

The making of the flaps and sewing them round and stitching out without any basting forms the next step in connection with pocket-making.

The object of basting under and out the flap is to keep the two parts in position until it is sewn round and stitched out; but if other and more simple and better methods may be employed to reach the same end, they should be adopted.

There are two methods of sewing round the flap: one, for the flap to be placed on the lining, as shown on Diagram 97; and the other, the lining on the flap, as depicted on Diagram 98.

Where the latter method is adopted the flap lining has first to be cut to the shape of the flap. In both cases, however, the flap has to be fulled on slightly at both ends, so that when it is turned out for stitching there should not be any surplus lining.

Some machinists are very sceptical as to any method but the one they use, and refuse to adopt any other; but as in this case the finished flap is the same whichever method is resorted to, the question as to the superiority of one over the other is hardly worth discussing.

In the case of Diagram 97, the machinist will cut round the flap lining and turn the flap out ready for stitching.

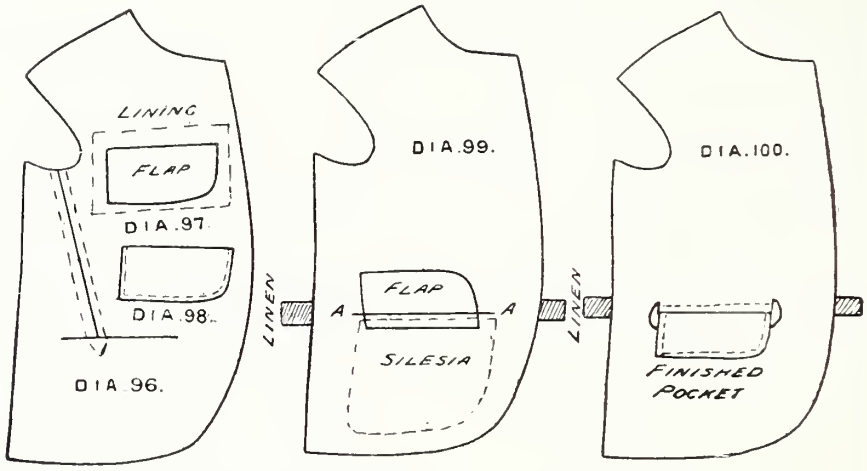
With regard to the stitching of edges, it cannot be too strongly emphasised that no edges, flaps or otherwise, should be stitched without a guide. This guide will be found illustrated on turning back to Diagram 12. It is very easily fixed to the bed of the machine with a screw, and after putting in the needle of the flap for the first edge, the guide should be pushed up to the flap and the screw tightened.

With this handy and useful mechanical appliance the flap is stitched without basting, and with the most perfect uniformity and regularity, besides saving the time of the tailor and machinist, and lessening the strain on the eyes.

If double-stitching is required, all that has to be done is to place the needle in the flap the width required, and re-fix the guide.

The flap is then given to the presser for smoothing out, and he in turn hands it over to the captain of the workshop, who marks it on the wrong side, if the pocket mouth is not cut open, thus showing the width of the flap required.

The pocket-mouth should always be marked with chalk, and not with basting cotton, as the latter has a tendency to get sown in, and it is not an easy matter to pick it out.



The forepart should be placed right side uppermost, with the bottom towards the wheel.

Underneath the chalk-mark a piece of linen about 2-ins. wide is placed, so as to reach beyond the back and front of the forepart, as shown on Diagram 99. Upon the chalk-mark of the pocket-mouth the flap is placed wrong side up, with the bottom towards the shoulder.

The chalk-line on the flap should be placed on the chalk-line of the pocket-mouth, as illustrated on line A A, Diagram 99.

Next sew the flap on to the forepart from end to end, beginning from where the fitter-up has marked the commencement of the pocket-mouth, and turn in the under half of the silesia; lift up the surplus flap, which goes beyond the line A A, and sew on the silesia ¼-in. from the flap-seam, as shown by the dotted lines on the diagram.

A commencement should be made to cut open the pocket-mouth from the centre up to within one-sixteenth of an inch, and the same with the other side.

Next turn in the under-pocket, and stitch a very narrow swelled edge, so as to catch the silesia. Double the forepart on the wrong side; place the other half of the pocket to the flap, leaving out ½-in., and sew on the pocket in the same stitch as the flap was sewn on. After sewing up the pocket the forepart is ready for canvasing.

In some workshops the top part of the flap is stitched, and the corners finished before the forepart is canvased, as it is easier to smooth out by the presser before canvasing; and after that the canvas is fastened to the pocket by the tailor with a couple of stitches.

We advocate this course because it economises time in sending the forepart backwards and forwards to the machinist, and without any advantage being gained thereby.

Diagram 100 shows the pocket completed.

It does not matter, of course, which forepart pocket is put in first; the process is the same in each case. It is necessary, however, to notice that the front part of the flap is level with the chalk-mark of the front forepart.

In some firms stay-tape in the under pocket in addition to linen is insisted on, in which case the stay-tape is sewn when sewing on the under pocket.

PUTTING IN POCKETS.

In the fitting-up of flaps it is not usual for the fitter-up of bespoke work to cut open the pocket-mouth, as he knows from experience the difficulties that may follow a deviation from this rule. He realises that the exact length of flap can hardly be gauged, and to cut the pocket-mouth may result in the flap being either too long or too short.

The accompanying diagrams illustrate the foreparts for disproportionate or abnormal figures, and in these cases a greater amount of spring has to be produced in the vicinity of the disproportion in order to get a proper fit. This is obtained largely by taking a piece out from under the arm and across the pocket, thereby creating a surplus of material underneath the pocket-mouth. Before the pocket can be put in as it should be this surplus material has to be temporarily cleared away, and a proper foundation laid, to enable a clean pocket to be made.

A glance at Diagram 101 shows that a piece is taken out under the arm, also across the pocket; whilst Diagram 102 represents another slightly different method of taking out cuts to give spring. In both cases the result is the same; that is to say, after the under-arm cut has been sewn up and pressed the pocket-mouth is as depicted on Diagram 103, with a surplus of material and then cut through the linen from one end of the pocket-mouth to the other.

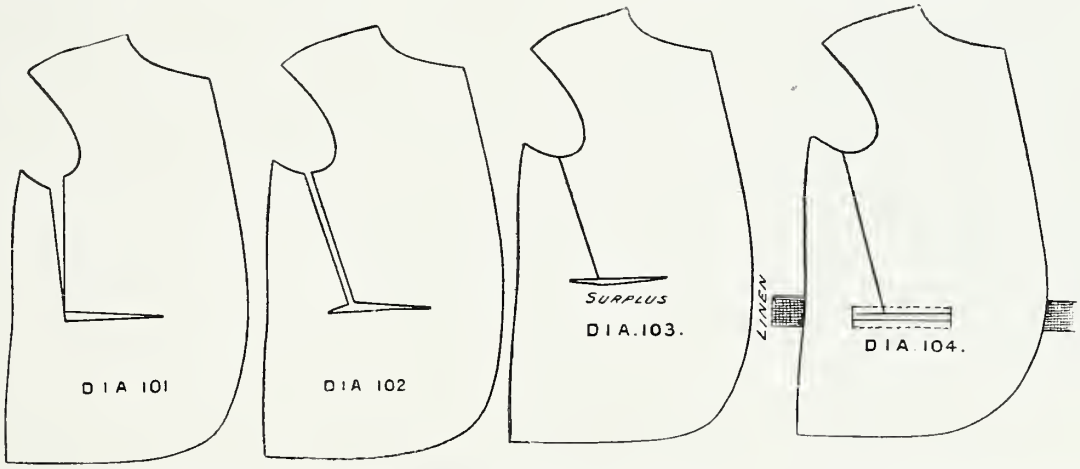
The flap for the pocket of this kind of abnormal garment cannot be cut until the foundation of the pocket, including the stitching round of the linen, has been made.

In cutting these flaps they should be a ¼-in. longer than the pocket-mouth, after having allowance made for making up. The reason of the extra ½-in. is that, although the fulness underneath the pocket-mouth has been temporarily cleared away to afford better facilities for putting in the pocket, the surplus material is still there, and therefore an equal amount of spring must be allowed on the top of the pocket-mouth to prevent any contraction, and to allow the garment to fit correctly on the hips. This extra allowance cannot, of course, be obtained from the top of the pocket-mouth so the flap has to be manipulated to provide the deficiency, flap was sewn in. Sew up the pocket and complete the stitching of the top part of the pocket-mouth, including the corners, as described in the previous article.

The pockets made up as described, with the extra fulness on the flap, will not only look better when finished, but will be more durable than the coat itself.

Some prefer a jeated or piped underneath pocket, in which case sew a piece of the same material on the underneath silesia before sewing on to the forepart. In sewing on the underneath pocket and the flap, this sewing must be done behind the sewing which was made when the linen was stitched round, so as not to show the stitches.

Difficult as this pocket is to put in until experience has been gained by constant practice, it is plain sailing compared to the putting of a similar pocket in check or striped materials.



or fulness underneath. In this state the pocket cannot be put in properly, and the fulness must, therefore, be temporarily cleared away from the pocket-mouth until the pocket and flap are put in. In order to do this the under-part of the pocket-mouth must be the same width as the top part, for the purpose of getting the flap to fit. The operations necessary to accomplish this are as follows:

Lay down the forepart with the wrong side up, with the shoulder towards the wheel, then take a piece of stay-tape and sew on the edge of the underneath pocket mouth, leaving out at each end about an inch of the stay-tape, as this will be required for sewing with the flap. Press the fulness away, and the way is clear to proceed.

After the foreparts have been pressed, place them under the needle with the right side up; lay a strip of linen 2-ins. wide underneath the pocket-mouth from front to back, as shown on Diagram 104, and stitch round the pocket-mouth on the edge, as shown on the dotted lines of Diagram 104 hence the flaps being ½-in. longer than the pocket-mouth when they are made up.

In commencing to put in the pockets place the forepart right side up, with the shoulder towards the wheel, and sew the silesia on the underneath pocket; turn it in and stitch it swelled edge; then turn the forepart over on the wrong side, with the bottom towards the wheel. Insert the flap, which in this case is marked on the right side, in the pocket-mouth, and the edge of the top pocket-mouth to meet the chalk-mark of the flap. Place the end of the flap, right-hand side, into the corner of the pocket-mouth; bring the stay-tape round and sew it with the flap. Sew across the top pocket-mouth, gradually fulling in the flap all along, and when nearing the other corner bring the stay-tape round and sew that with the flap.

Always see that the edge of the flap in either side is right in the corners of the pocket-mouth, so that there will not be any holes in the corners, then sew on the top half of the silesia in the same stitch as the

This, however, must be left over until the subject of striped materials is dealt with.

MAKING AN OUTSIDE BREAST POCKET.

The making of an outside breast welt pocket entirely by the sewing machine, and without the aid of any basting or sewing by hand, forms the subject of the present chapter. To complete this operation, or series of operations, proves both an interesting and instructive education in machining.

It will be impossible to depict the whole process of making the pocket by means of drawings, but the accompanying illustrations cover the ground fairly well, and for the remainder the explanatory letterpress must be carefully studied.

Those details which cannot be illustrated will be apprehended by the machinist of any length of experience at working the sewing machine, or by those who have kept

in touch with the preceding chapters in the series.

The making of this pocket is not really difficult to the machinist of average ability; all that is required are care and deftness of fingers, and the doing of the right thing at the right time. The whole secret lies chiefly in the correct sewing on of the pocket facing. It may appear strange to say that indifferent sewing on of one of the pocket facings would lead to dire results, such as tightness at front of scye, also at the break; but why this is so will be quite apparent as we proceed.

Before, however, dealing with the defects of poor sewing on the welt and pocket facing, it will be best to treat of making the pocket first, and then to point out the cause of certain defects afterwards.

In the first place, the position and length of the pocket should be marked by the fitter-up. This should be done with chalk, and marking-stitches pulled out, so as not to be sewn with the seam. The run of the welt, both back and front, should also be marked, leaving nothing to chance.

The question of checked or striped materials, where the welt has to be matched, will be dealt with at a later stage.

To commence, place the forepart under the needle-bar with the shoulder towards the wheel. Underneath the chalk-mark place a strip of linen. In all cases the welt and pocket facing must be $\frac{1}{2}$-in. each side more than the actual length of the welt required. Place the edge of the welt level with the chalk-mark, leaving out $\frac{1}{2}$-in. at the front, and commence to sew on the welt to forepart from that point, and sew with another strip of linen at the same time. (See marks on the welt, Diagram 105.)

The sewing on of the pocket is the next important feature.

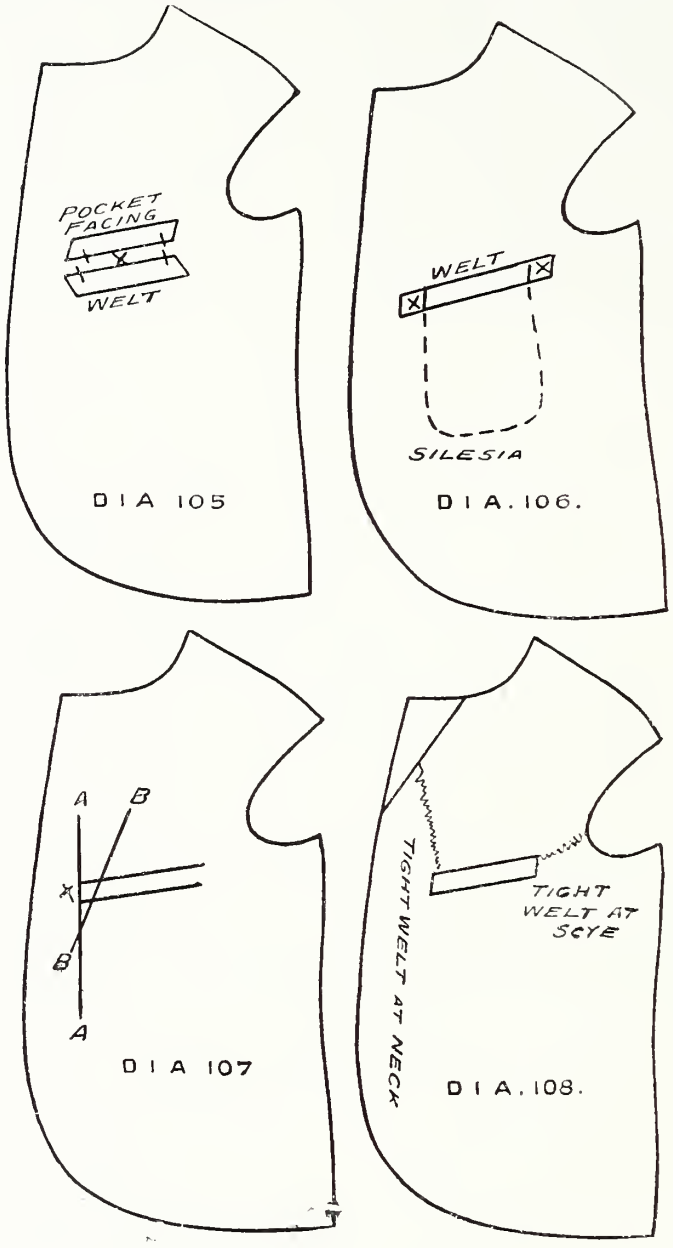
Turn the forepart round so that the bottom part will be towards the wheel. Place the edge of the pocket facing level with the edge of the welt, and sew from the back and level with the sewing of the welt. Sew the pocket facing on within $\frac{1}{4}$-in. from the front sewing of the welt, the reason for which will be explained later on.

Now cut the pocket-mouth open, from the centre, as marked by X on Diagram 105, as far as the pocket facing only towards the front, and then cut open towards the back. With the point of the scissors notch the seams in an oblique direction, both back and front, as far as the sewing of the seam, but not beyond. Have the seams pressed open, and when re-turned sew on the pocket to the welt, also on the facing. Press the top part of the pocket through pocket-mouth; turn in the welt $\frac{3}{4}$-in. in width, and stitch either single or double, as required.

Put another stitch in the seam on the right side to keep the pocket fastened down, or else turn the forepart over on the wrong side, and stitch the silesia down on the edge of the seam. Either method will keep the pocket down, but doing it on the wrong side is cleaner.

Slightly cut or notch the silesia of the welt at the side as far as the sewing of the welt, and press the silesia through the pocket-mouth. The welt is now ready for tacking, with the sides open, as shown on Diagram 106.

The space where the cross is back and front represents the surplus welt, which is to be turned in for tacking. This is an intricate part. Place the forepart under the needle with the button towards you. Beginning with the armhole side, turn in the surplus welt as marked by the cross on Diagram 106, according to the shape and chalk-mark on the forepart, and with the handle of the scissors knock the edge down. This makes a dent inside the welt, which is the mark and guide for sewing under.



After that is done, place the second finger of the left hand on that part, just slightly, and with the right hand sewing the forepart round, keeping the left-hand finger on the welt all the time until the shoulder is towards you. Then place the third finger of your right hand inside the welt, and on

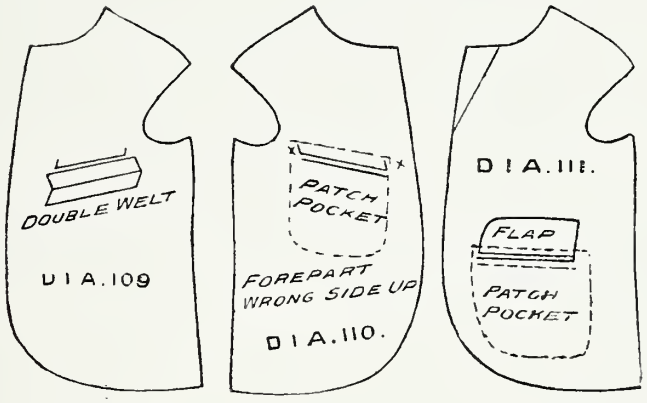
the surplus release the left-hand finger, and with the thumb and that finger lift the welt over, from the centre to the left, and sew under the welt where the dent was made. That side is finished sewing under.

Now turn the forepart round so that the shoulder shall be towards the operator; turn in the surplus welt in front the same as the back; knock down with the handle of the scissors to make an indentation; swing the forepart round; lift up the welt again from the centre, and sew under the front in the dent.

Cut away the surplus welt from inside the pocket-mouth, within ⅛-in., so as not to fray out, and stitch the sides of the welt a narrow swell edge.

The pocket is then sewn up and the welt completed.

After sewing under the backpart of the welt see that it lies smooth before sewing under the front side.



Don't pull the welt either towards the back or front when sewing under, and if properly sewn on it will lay itself down smooth.

The machinist himself should snip or nick the welt for pressing open, for if left to the presser, he, not knowing the science of machine work, may nick beyond the seam, which can only be remedied by having a new welt.

The reason for sewing on the pocket facing shorter than the welt is as follows:

A glance at Diagram 107 shows that line B to B is the run of the front shape of the welt; and line A to A is the end to where the welt has been sewn on.

If the pocket facing had been sewn on up to the line A to A, and level with the welt sewing, and where the welt was to be completed with the shape of the forepart, as line B to B, an opening on the forepart would occur, indicated by the cross the open space or hole being next to the cross. To avoid this, which would mean a new and longer welt, the pocket facing has to be sewn on in the front shorter than the welt.

On Diagram 108 another defect is indicated

If a welt is sewn on tight instead of normal, when the welt is sewn under with the shape of the forepart as marked by the fitter, the welt is pulled either to the back or the front, with the result as shown on Diagram 108, that it will drag at the seye, or from the break of the lapel.

As we have linen top and bottom when sewing on the welt, the pressure-foot must be loosened one turn, and this will steady the sewing on of the welt in the ordinary way.

Another reason for having linen underneath the pocket-mouth is to prevent the welt from gaping after the coat has been worn for a little time, and where the pocket is in constant use.

POCKET MAKING BY MACHINE.

The varieties of pockets are almost legion, and almost each one requires a slightly different method of treatment in making.

Apart from the ordinary flap pocket, either single or double-stitched, which has been already described, together with the making of the welt, there is the plain patch pocket, which is quite simple to make; and the unlined patch pocket on the wrong side, with a welt on the right side. Then we have the outside flap with the patch pocket inside; the outside patch pocket with a watch pocket at the side; the bellows pocket; jeated or piped pockets for dress jackets; half-moon pockets with flaps, also without flaps; skirt pockets with welts; Raglan pockets; in addition to various kinds of bound pockets; also corded edges with flaps or welts.

THE OUTSIDE BREAST WELT POCKET.

The first pocket to be dealt with is the making of an outside breast pocket with a welt, which at the same time has a patch pocket inside.

The first thing for the fitter-up to do is to cut the patch pocket one-sixteenth of an inch wider than the length of the outside breast pocket, and a similar amount for turning in for stitching. This patch is basted all round by the tailor, and is the only handwork required for this purpose. This is necessary, as the machinist cannot turn in the patch whilst stitching it round, as the stitching would not come out straight on the right side.

Next the welt has to be cut on the double, as shown on Diagram 109.

The welt is then sewn on with a narrow strip of linen, and the pocket-mouth cut open. This must be cut open a little shorter than the full length of the sewing of the welt, for the reason described in the preceding chapter (see Diagram 107).

As the material for this kind of work is usually flannel, the seam can be rubbed open with the thumb. The welt is turned in the required width and stitched either single, double, or swelled edge, as required. Then stitch on the right side of the forepart underneath the welt-seam, a coarse single-stitch, so as to hide as much of the seam as possible. Cut away this surplus welt, but not too close, so as to fray out.

Now turn the forepart over on the wrong side and give a slight notch at the corners of the top part of the pocket-mouth, as shown by the cross on each side on Diagram 110.

Lay the patch pocket down on the bed of the machine, with the turned-in side uppermost; and sew across the top part of the pocket-mouth, on the patch, leaving out of the patch an amount as much as half the width of the welt. Place the forepart wrong side up, with the shoulder towards the wheel; turn the welt from underneath towards the bottom, and stitch the top part of the patch only on the edge. Break off the silk top and bottom. Turn the forepart over on the right; smooth the patch so as not to be caught with the welt, as shown on Diagram 106, and described in the last chapter.

To complete, stitch the side of the welt through the patch pocket, after having cut away the surplus at the sides.

This time turn the forepart over on the wrong side, and the stitches on the wrong side. Where the welt had been sewn under is the guide for commencing to stitch round the patch on the edge.

In doing this, and before stitching, see that the patch lies straight, otherwise the stitching will be crooked and irregular on the right side. Both the welt and the patch are now complete, without having as yet been touched by the tailor or presser.

It should be noted that the bobbin silk must be the same as the top, and should be wound off the same reel so as to ensure it being the same.

As the patch must be stitched on the wrong side it would be wise to tighten the top tension with, say, half a turn, to enable the stitching on the right side to sink in

better in the forepart and when this is smoothed over with the iron it brings up the stitching as though it had been done on the right side. If the patch is to be double-stitched, the second row of stitching must be done on the wrong side, and not on the right otherwise it would look as if it were two different kinds of stitching.

In commencing the second row of stitching, begin where the tacking of the welt ended, in order to secure uniformity of width.

Another point not too insignificant to overlook, is always to cut off the ends of the silk, and not leave it to the person who next takes the garment in hand. The reason is, not only that you will gain the reputation of an untidy machinist, but that the person named may pull off the ends, instead of cutting them, and thus undo part of the stitching.

THE HIP PATCH POCKET.

The bottom, skirt, or hip patch pocket with a flap on the right side forms the next feature in pocket making.

The first thing to do is the making of the flap, which has already been described.

Next sew on the flap to the forepart, according to the mark of the flap on the wrong side. Linen is not really required for underneath, as in other pockets, although some firms insist on it. Follow by sewing on for the under-pocket a piece of stay-tape. Cut open the pocket mouth; turn in the material, but leave out a narrow piping, and stitch under the seam the same width as the piping, as indicated by the dotted lines under the flap on Diagram 111. Cut away the surplus from under the stitching, but not so close as to curl up.

The hip patch pocket, like the one with the welt, has to be basted all round.

Place the patch under the needle with the turned-in side up. Double the forepart on the wrong side, and in the same stitching, where the flap is sewn on, sew the patch across, leaving out ¼-in. of the patch, and see that the patch is level each side of the flap. Turn the forepart over to the right side and stitch across the top part of the flap a single stitch.

Cut away the surplus of the flap; turn over the forepart on the wrong side, and stitch the patch all round on the edge, including the top part of the patch.

The reason for stitching the top part of the patch forming the welt, as distinct from the skirt top part, will be apparent. The stitching of the sides of the flap, by half circles, or points, is then completed.

As the patch pocket is not wide enough to admit of this stitching being caught with it, a piece of the same material is placed underneath each side of the flap, and this is felled round by hand.

In some firms a piece of linen turned in is stitched with the sideseam part and felled down. Where linen is used by the machinist, either for the welt or the hip pocket, it should not be black when the material is of a light colour.

Everything should match as nearly as possible. For a very fine and light-coloured flannel a size 2 needle should be used in preference to sizes 2½ or 3.

MAKING A BELLOWS POCKET.

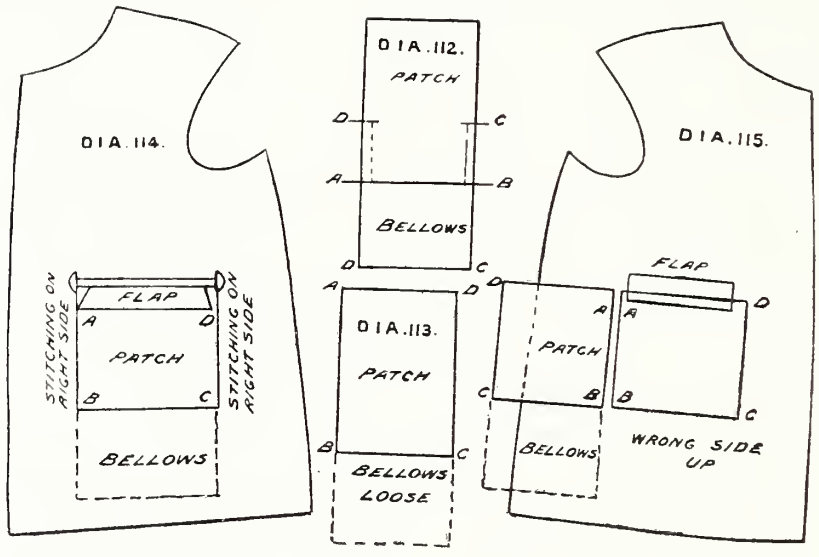
The making of the pocket about to be described must not be confounded with the bellows pocket largely inserted in military tunics worn by officers. The one under consideration is frequently made up in unlined dust or covert coats. It consists of an outside flap with a jeatted under-pocket, thus increasing the cost of production. This fact, however, should not prevent the machinist from acquiring a knowledge how to make it.

To begin with, the patch must be made up into shape. The width of the patch should be ½-in. wider than the width of the pocket-mouth, and the length about 16-ins., which is reduced to 12-ins. after being made up.

On Diagram 112 will be observed a drawing of the length and width of this patch.

First turn in lines A and B so that points C and C and D and D meet each other; then sew down a narrow seam, as shown by the dotted lines as from C to B and D to A.

Make a notch as far as the sewing at points D and C, and turn in the same as a flap; this gives the patch and bellows, as represented on Diagram 113.



piping to form the lower part of the pocket-mouth, and a patch on the wrong side, which is not stitched to the edge, as other patch pockets, but sewn under.

The sewing under of this patch forms the most difficult part of the machinist's work, as it requires great attention, care, and accuracy of eye.

This patch possesses the double advantage of not only being able to accommodate more papers than an ordinary patch pocket, but its construction enables the additional papers to be hidden from view, by not bulging out and betraying their presence.

Furthermore, it is a longer pocket than ordinarily, and although sewn on the wrong side, the stitching shows itself on the right side; yet, owing to the peculiarity of this pocket, the stitching on the right side, all round, will only be half of the full length of the patch pocket on the wrong side.

It might be pointed out that this pocket is not in general use, for the simple reason that it takes longer to make than other

A, B, C and D is the patch to be sewn round the forepart, and the dotted lines represent the loose bellows, which hang down on the wrong side of the forepart without being attached to the forepart. This section of the pocket is the receptacle of any additional papers or other articles carried by the wearer, and is not visible on the right side of the garment.

Diagram 114 illustrates the bellows pocket complete with the flap, as shown.

A, B, C and D, the thick lines, represent all the stitching on the right side; whilst the dotted lines section hangs loose on the wrong side, and has no stitching whatever.

The making of the pocket is now proceeded with.

The flap is first made as usual and stitched out, either single or double; it is marked on the wrong side, and sewn on in the ordinary way. A narrow strip of the same material is sewn underneath the flap, and the pocket-mouth cut open within a sixteenth of an inch of either corner. This

strip is turned in to form a pipe, and stitched underneath the seam. It would do no harm if a wide swelled edge were stitched to prevent it from curling up, and another stitch inside the seam for firmness.

The forepart is turned over on the wrong side and marked with chalk the width and length of the patch. This is a guide for seaming the patch straight, so as to prevent any uneven stitching on the right side.

Now take the patch with the wrong side up; leave out ½-in. on the top for the first row of stitching of the flap, and sew a narrow seam from A to B, as shown on

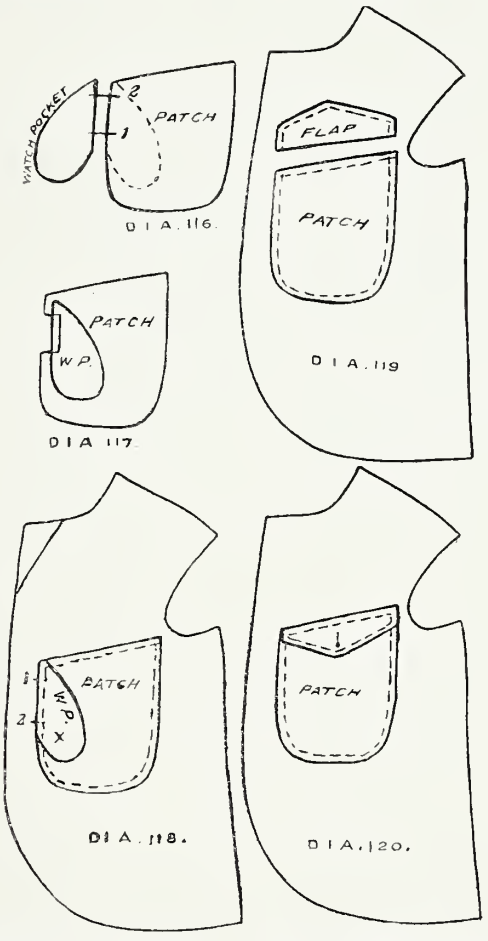


Diagram 115. Lift up the foot, and leave the needle in at point B. Sew another seam from B to C. Lift up the foot only and sew from C to D.

Stitch down the first row of the flap through the patch; cut away any surplus of the flap so as not to be too thick, and complete the second row of the flap and the corners, as shown on Diagram 114. The top part of the patch is turned in and felled down.

There is a way of sewing this felling by basting the top part of the patch before being sewn round and stitched with the second row of the flap; but this would appear too clumsy and would show too much after the iron had been on it.

The sewing round of this patch is certainly difficult at first, so are most things on the first attempt. A good plan in order to get practice is to operate on a piece of spare material, until facility and expertness are gained in sewing the patch round.

The most difficult part is the sewing round between points B and C, so as to get the patch at each side the same width, other wise the stitching on the right side will be wider at one side of the flap than the other, which would never do, as it would appear lopsided. The whole thing would have to be undone, which no one cares to do.

The bellows pocket looks complicated to make, but a little practice will enable the machinist to master it and quickly become proficient.

INSERTING WATCH POCKET INSIDE THE PATCH.

During the summer months quite a number of people discard the waistcoat altogether, wearing perhaps a flannel undergarment, and perforce utilising the outside breast pocket of the jacket as a receptacle for the watch. For it should be understood numbers of men refuse to adopt the present fashion of wearing the watch on the wrist, preferring the timekeeper and guard.

Putting the watch in the breast pocket and covering it with the handkerchief, necessitating the withdrawal of the latter every time the watch was consulted, proved a cumbersome and unsatisfactory procedure, hence some ingenious tailor invented the watch pocket.

This idea, as will be observed by our diagrams, is applied to the out-breast patch pocket.

At first an open slit at the side of the patch was adopted for the watch to be placed through; but this did not answer the purpose, as the handkerchief still had to be removed, so something better than this had to be devised. The idea was gradually evolved of an additional and invisible small patch pocket to receive the watch itself. This small patch is cut with a point at the top, and widens out at the bottom.

Diagram 116 illustrates this quite plainly.

The following is the procedure in order to make the pocket.

From the top of the patch mark off 1-in., and then add another 3-ins. for the slit. Place the small patch to the large one, as shown by the dotted lines on Diagram 116, and sew a narrow seam, as from 1 to 2, with a piece of stay-tape. Notch points 1 to 2 as far as the sewing; turn it in and stitch it double or single, but preferably double. You then get something similar to Diagram 117, with the small patch attached to the large one.

The patch must now be basted all round and level with the stitching.

If the material is of a ravelly or fraying nature, then the small watch pocket must also be basted round inwards.

Next place the patch on the forepart level with the marking-stitches, and draw the latter out.

Place the right hand under the large patch, and on the small patch, which is marked with a cross (X) on Diagram 118.

With the left hand lift up the big patch and stitch the small patch round on the forepart once only.

Replace the large patch and stitch round double up to point on Diagram 118. Make a side-tack as marked. Break off the top silk. Make a side tack at point, and complete the stitching from 1 upwards. This completes the making.

MAKING A POINTED FLAP.

In Norfolks or Sports Coats flaps are frequently superimposed on the patch. At one time the method adopted was first to stitch the patch round and then put on

the flap. Some, in fact, still proceed as stated, but in this case the flap cannot be got near enough to the patch to make both sides level, especially when everything is cut to fit exact. In striped materials, where the stripes must match, this difficulty is accentuated. To obviate it, and to make the patch meet the flap and not the flap the patch, it is necessary to sew the flap on first.

After the flap has been made it is marked on the wrong side and the surplus cut away. Then the flap is sewn on the edge where it was cut away, from one marking-stitch to another, ¼-in. above the marking-stitch, and turned over and stitched double. The flap is next lifted up, and the patch brought up hard to the second row of stitching, and stitched round double. The corners at each end must be well tacked by the machine.

If the patch chances by accident to be a little wider than the flap, it should be fulled on slightly where the flap will hide it. This shows the advantage of the flap being sewn on first, as otherwise the flap would have to be stretched, which would give it a lop-sided appearance.

Diagram 120 shows the flap and patch complete.

If a flap is required for a patch with the invisible watch pocket, the same method must be adopted.

MAKING A NORFOLK SIDE POCKET.

For the sake of brevity, the making of the pocket about to be described is called the Norfolk side pocket, although strictly speaking it is a pocket inserted in or under the pleat of any garment.

When the pleat or strap is laid on the pocket is inserted underneath, and the strap stitched on after the pocket is completed. If the pleat forms part of the forepart the pocket is put in after the pleat is made; but in both cases the same methods are pursued.

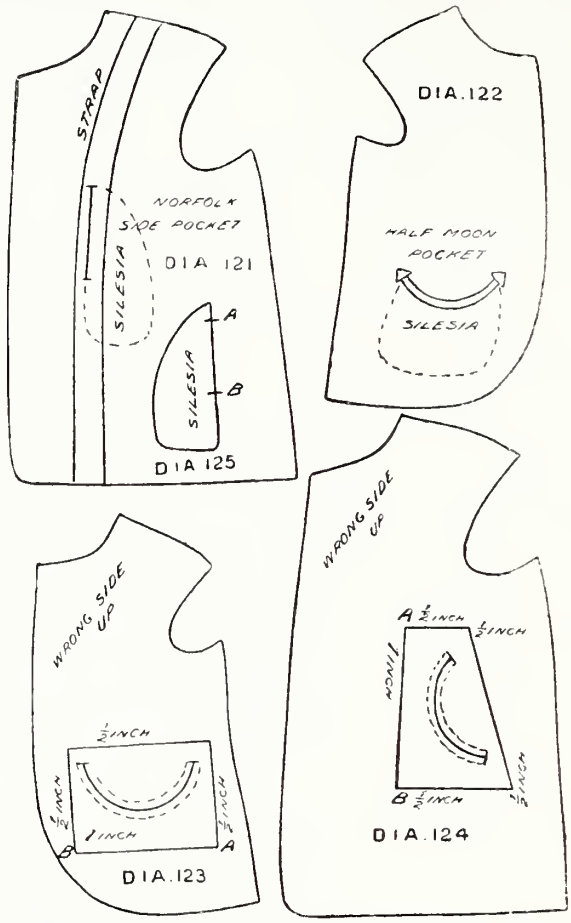
The dotted lines on Diagram 121 represent the shape of the pocket, of which there are two halves. No pocket facing is required for this purpose. The essential part of this pocket, in fact, is the thinness with which it is made, in order to prevent bulging under the pleat.

First place the forepart under the needle, with the armhole towards the wheel; under the chalk-mark of the pocket-mouth place a strip of linen. Now place one-half of the silesia on the chalk-mark, leaving out ½-in. at top, and sew the length of the chalk-mark an ordinary seam. Turn the forepart round and sew the other half on in a similar manner. Cut the pocket-mouth open from point to point. Turn in that part of the silesia sewn on last, and instead of bringing it over like an ordinary under-pocket, let the silesia form a narrow piping, but level with the edge of the material, and stitch in the seam. Pull through the silesia on the front part and sew round the pocket.

Tack the pocket as shown on Diagram 121, and before tacking place an additional piece of linen at each corner. In sewing on the silesia on both sides a narrow seam should be taken. The strap is then basted on and stitched down, leaving that space of the pocket-mouth open.

At each side, and at the top, leave out ½-in., and at the bottom 1-in., so as to cover the lowest part of the round. Under that insert a piece of linen the same width all round.

The thick half-moon line, on Diagram 123, is the chalk-mark. Stitch round under that line one-sixteenth inch, from point to point, as shown on dotted lines; turn the forepart round and stitch the top dotted lines. Cut the pocket-mouth open, as per thick line. Turn the forepart over on the right side and pull through the mouth, both top and bottom material, and break the pipes out well, and narrow.



THE HALF-MOON POCKET.

The half-moon pocket illustrated on Diagram 122 is a double-piped or double-jeatted half-moon pocket. Like the Norfolk pocket, it is not easy to make without practice. The breaking out and the regularity of forming the piping top and bottom suggests difficulties for the machinist. Patience and care are required, especially for the formation of the top piping.

First, the pocket-mouth has to be marked on the wrong side. Then place the forepart on the wrong side, with the shoulder towards the wheel. Underneath the pocket-mark place a square piece of the same material face to face.

Now stitch in the seam of the bottom piping with silk and a small stitch. Then sew on half of the silesia to that part, forming the lower piping, as from A to B on Diagram 123.

On the other half of the silesia sew on a pocket facing 2-ins. in depth; place that on the other half of the silesia, leaving out ½-in. at sides and top, and sew round the pocket, which should be about 2-ins. from the bottom of the forepart. Break out the top piping in a similar manner and the same width as the bottom, and stitch in the seam through the top pocket facing; tack the sides and complete the

finish by stitching the points as shown on Diagram 122.

Sometimes an additional stitching is required under the piping both top and bottom ; this must be done after the piping has been stitched. In some cases the corners are embellished by being worked out with buttonhole twist by the buttonhole worker.

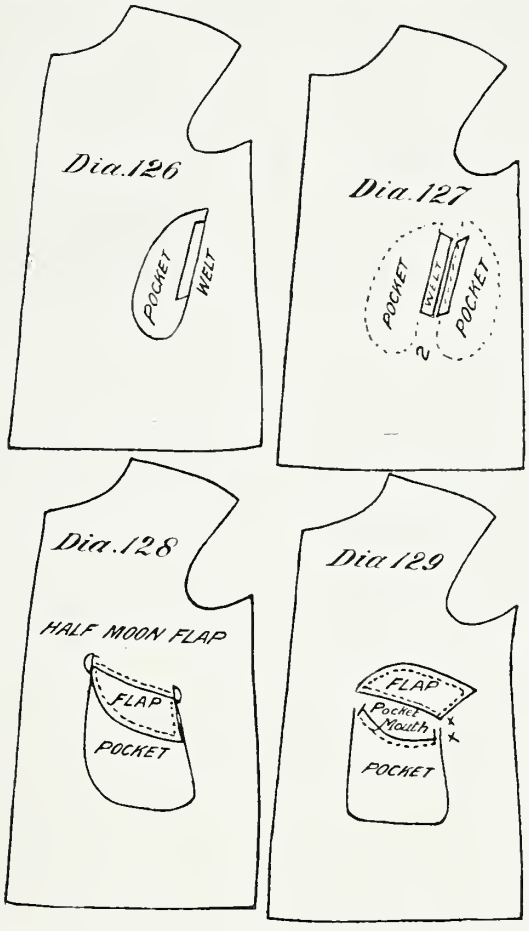
This pocket is not so simple to make as it is to describe how to make it, and experience is necessary to ensure satisfaction. Practice should be obtained by utilising any spare pieces of material, preferably worsted or beaver.

A large number of these pockets are inserted as ticket pockets in the foreparts of farmer's shooting coats, which are frequently made from heavy Derby tweed material. The breaking out of the pipes will at first make the fingers quite sore, but this will pass away.

THE VERTICAL HALF-MOON POCKET.

The vertical half-moon pocket, cut slightly on the slant, as shown on Diagram 124, is inserted mainly in overcoats ; the principle, however, of making, is similar to the one just described and illustrated on Diagram 123. The only difference is that the silesia to form the pocket is not on the straight, but is cut as for a Norfolk Jacket.

This is indicated on Diagram 125, and where the under-piping has been stitched out. That part of the silesia marked A and B is sewn to the lower part of the piping of Diagram 124, also marked A and B, the other half having a pocket facing, which is sewn on in the direction of A and B, the pocket sewn round, and completed the same as Diagram 122.



MAKING A RAGLAN WELT POCKET.

The Raglan stitched vertical welt pocket, although put in with a welt, differs in the making from that of the outside breast welt pocket, for example.

In an ordinary jacket breast pocket the front facing is sewn on shorter than the welt, as explained in describing Diagram 107. To avoid a hole in the front forepart, the facing for a Raglan welt pocket has to be sewn on shorter than the welt at the back or the bottom of forepart. Diagram 126 illustrates the welt pocket complete.

As these pockets are in almost constant use, a greater durability is required, and this must be provided by putting extra stays in the pockets. The silesia to form the pocket is cut by the fitter-up differently to the ordinary outside breast pocket, as will be seen on Diagram 127, as per dotted lines.

The position of the pocket-mouth is also marked by the fitter-up, on the face of the forepart, with chalk. Sometimes this mark will be made with basting cotton at each end, but the exact position of the pocket must be marked.

This done, place the forepart on the bed of the machine, with the armhole towards the wheel, that is if the left forepart is taken first. Put a strip of linen under the chalk-mark of the forepart ; then sew on the welt, with another strip of linen on the welt ; turn the forepart round and sew on the facing, and begin to sew $\frac{1}{8}$-in. from the sewing of the welt, and sew it up to the end of the sewing.

Cut the pocket-mouth open and notch in the corners ready for pressing open the seams. Notch the corners in the manner described previously in dealing with Diagram 105.

After the forepart has been pressed, stitch the facing to one-half of the pocket or silesia, as shown on Diagram 127, and then sew on the other half from point 1 to 2.

Turn in the welt the width required, *viz.*, $\frac{3}{4}$-in., and stitch it double, which is usual in Raglans. The width of the stitching should be in accordance with the instruction ticket, and should be given by the cutter. Fasten the pocket with another stitching in the seam of the welt, or a blind stitch in the back-seam. Notch in the silesia at the side of the welt, and as far as the seam, and pull the two halves of the silesia through the pocket-mouth. The welt is now ready for sewing under. The point of the welt should be directed towards the armhole.

Turn in the topside of the welt first in a slanting direction, as shown on Diagram 126, and sew that under. Turn the forepart round and sew the other side of the welt in the same direction as the top part of the welt. Cut away the inside surplus of the welt, and before tacking the welt stitch round the pocket.

Additional strength is required at the bottom part of the welt, where there is more pressure than on the top of the welt, and therefore it is necessary to place under the corner of the bottom part of the welt another small piece of linen or fine canvas before the usual tacking, so as to stand the extra strain.

It is not necessary to describe in detail the making of this pocket, as this has been already done in dealing with the making of welt pockets, and illustrated by the Diagrams 105 to 108. The same principle applies to this Raglan pocket. with the variation of sewing on the pocket facing as mentioned.

HALF-MOON FLAP POCKET.

Difficult as it is to make the half-moon jetted or piped pockets, as described in the preceding chapter, it is more difficult still to put in the half-moon pocket with flap.

The principle of the latter is not the same as the former ; it is more on the lines of the ordinary pocket with a flap, as described in connection with Diagram 99.

The shape of the flap is illustrated on Diagram 128, and the position of the pocket-mouth is marked with chalk on the right side of the forepart. The flap is sewn to the flap lining, as usual, and stitched out double-stitched.

The two halves of the silesia for the pocket must be cut to the half-moon shape of the pocket-mouth.

The flap, after being pressed or smoothed out, is marked on the wrong side. The sewing on of this flap is the most difficult part. In order to get an accurate half-moon shape it cannot be sewn as the straight flap, with one revolution ; there must be several stoppages for adjustment. To render the sewing on of this flap more simple, notch the top part of the flap in two places in the centre, as far as the chalk-mark ; this gives a better spring at the contracting part of the flap.

Now place the forepart in the machine and put a strip of linen under the chalk-mark. Place the flap on the chalk-mark of the pocket-mouth, as shown by the cross at the side of the flap and the pocket-mouth. The thick line on Diagram 129 represents the chalk-mark of the pocket-mouth.

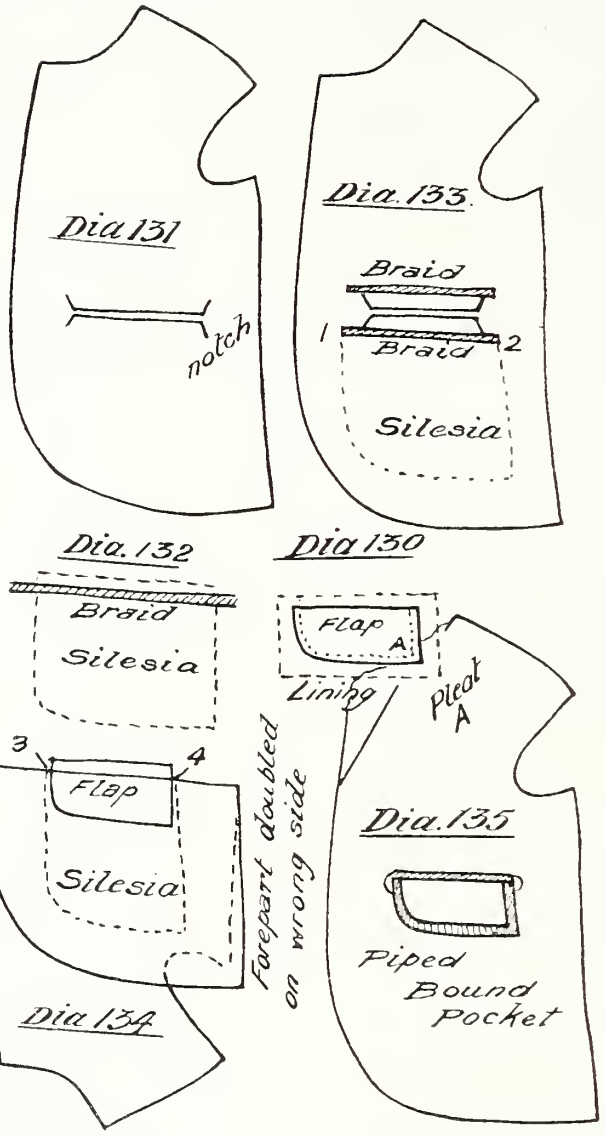
Sew about an inch of the flap, then adjust the chalk-mark of the flap to the chalk-mark of the pocket-mouth, and sew another inch, and so on, until you have completed the sewing of the full length of the flap ; it will then appear like a frill.

In order to turn in the under pocket to sew on the forepart, you will have to notch the centre so as to obtain a spring, which will enable you to turn in the silesia with ease. Sew this on with a piece of staytape, leaving out at each end about an inch to sew with the corners of the flap. Cut open the pocket-mouth within one-sixteenth of an inch at each corner ; pull through the under-pocket, and stitch it either double or swelled edge , then double the forepart on the wrong side, and sew on the other half of the silesia to the flap, and sew with the staytape, which is left on at each corner of the under-pocket. Stitch the pocket round and complete the stitching of the top part of the flap and the corners, as shown on Diagram 128.

If the under-pocket is to be piped, then a facing has to be cut the shape of the pocket-mouth. The other side could be straight, as well as the silesia, when the two are sewn together, before sewing on to the forepart.

A little practice will enable the machinist to overcome the difficulty of sewing on this half-moon flap.

The series of articles or chapters dealing with pocket-making may perhaps seem unnecessarily prolonged by some, but having started on this section of the subject it would not be wise to leave it incomplete.



As a matter of fact, pocket-making is the most intricate part of garment making by the sewing machine. There are more details and accurate measurements to be observed than when making up any other part of the garment. Besides, having described sleeve and lining making, pocket-making is the next stage in the making of a coat, and must therefore be dealt with in its proper order.

Stitched pockets having been discussed, the next step is making up bound work by the machine.

PIPED-BOUND POCKETS.

There are three kinds of bound work, *viz.*, piped-bound, stitched on braid and flat-braid. Several other kinds were the vogue thirty or forty years ago, such as cloth-bound, and italian-bound ; but these are now out of fashion, so it is not necessary to go into them. Any machinist capable of making bound pockets could readily adapt himself, or herself, to the making of the pockets named, should they again become the fashion.

The piped-bound pocket has the braid sewn on the right side of the cloth and

felled on the wrong side by hand, and the edges formed as a kind of piping.

To make these pockets by machine the flap must first be prepared as shown on Diagram 130. The dotted lines outside the flap are the lining ; upon this place the flap, which is cut to measure. The flap is either basted on about one inch away from the edge, or is slightly soaped and stuck with a cool iron, when it is desired to avoid basting. When this is done do not cut round the flap lining, which, of course, is wider all round, but proceed to sew on the braid. The width of sewing on the braid from the edge depends upon the width of the piping required when finished. This may be ascertained by referring to the instruction ticket. The width is usually $\frac{1}{8}$-in.

Place the flap under the needle ; take the braid in the left hand and sew it on the flap $\frac{1}{8}$-in. from the edge, and on the edge of the braid.

The dotted lines inside the flap on Diagram 130, represent the width of the sewing on of the braid.

Commence from the top of the flap, and sew to point A. Then stop ; lift up the foot and needle, and make a slight pleat at A, as marked on the diagram. Put the foot down on the pleat and begin to sew through the pleat, the bottom part of the flap, and when reaching the round part of the flap the braid should be somewhat eased, as being sewn round that part, by pushing the braid forward without lifting up the foot. Unless the braid is loosened on the round it will be tight at that part when felled over, and difficult to press away, besides putting the flap out of shape. This will be especially prominent in some kinds of materials, such as diagonals. The rule to be followed is, the sharper the round of the flap the looser must the braid be sewn on. In all cases the width of the sewing round of the braid must be the same from the beginning to the end, otherwise the unevenness will be very apparent when the flap is smoothed out after felling.

When the machinist has finished this operation the flaps are passed over to the tailor or tailoress, who will cut round the flap lining and fell the braid over ; they are then pressed, and afterwards the pocket-mouth is marked the width of the flap on the right side—not on the wrong side of the material.

When the flap is ready the machinist places the flap on the line where the pocket-mouth has been marked, and a chalk-mark at each end of the flap is made, and the pocket-mouth cut open from mark to mark.

In order to obtain a piping at the top and bottom of the pocket-mouth the same width as the flap, and which will correspond with the edges of the garment, and also to ensure the corners of each side of the flap being uniform, the corners of the pocket-mouth must be notched both top and bottom.

A reference to Diagram 131 will show that the corners are notched slanting, not straight, and the same width as the piping. This is done to admit of the corners being the same width when the flap is sewn in. The object of notching on the slant instead of straight is because the corners of the forepart have to be sewn under after the flap is in, and if the notch is straight there is no grip to sew under, whilst the slanting notch gives a tongue to sew under and a clean corner. This is an important consideration.

After the notching, sew the braid on one-half of the silesia to form the under-pocket, not on the edge of the silesia, but $\frac{1}{8}$-in. from the edge, as shown on Diagram 132.

Leave out at each end about $\frac{1}{2}$-in. of braid so as to be sewn with the corners when the latter are sewn under. Next, place the forepart under the needle, with the shoulder towards the wheel, and right side up.

Sew the edge of the braid of the under-pocket (see Diagram 132) to the forepart, and on to that part, beginning from where the notch ends, as shown at points 1 and 2, on Diagram 133. Do not sew it on the edge of the pocket-mouth, but as described, and as indicated on the diagram.

Now sew a plain piece of braid on the top part of the pocket-mouth in the same manner, from end of notch to notch, and leaving out a little of the braid at each side, the same as at the bottom.

In sewing on the braid top and bottom, separate strips of linen must be placed under the forepart.

Turn in the under-pocket ; break out or form the piping with the surplus of the cloth left out, and stitch in the seam. Observe that the piping is level all along, and when stitched out just rub the braid across with the nail of the right thumb, so as to cover the stitching, and flatten the braid. The edge of the braid will now be the edge of the pocket-mouth.

Further, when sewing on the braid both top and bottom, it should be kept a little tight ; this is afterwards pulled out, when the flap is sewn in, and keeps the pocket in good position after being smoothed out under the iron with linen.

The next step is to sew in the flap. To do this, double the forepart on the wrong side, as shown on Diagram 134 ; push down the under-pocket and bring out more prominently the top part of the pocket-mouth, as marked 3 and 4 on the diagram. Place the flap on the other half of the silesia, and with the chalk mark of the flap upwards ; put that under the top part of the pocket-mouth. Arrange the corner of the pocket-mouth level with the edge of the flap and on the chalk-mark, and sew the braid across the flap to the other end of the notch, which should also be level with the edge of the flap. When nearing the centre of the flap pull the top part of the pocket-mouth so that the corner reaches the edge of the flap. This has been allowed for by keeping the braid tight when sewing on to the forepart.

When the top part of the braid is sewn on the flap it should be sewn on that part which reaches the edge of the material of the pocket-mouth ; this means that midway of the braid has to be sewn on the flap so as to form the correct width of the piping for the top part. After that is done, turn the forepart back full length on the right side ; bring the flap out, and with the fingers of the right hand move backwards and forwards, so as to roll out the top piping. When this is level, stitch in the seam of the braid the same as described in dealing with the under-pocket. This leaves the corners on the right side to be sewn under.

Take the point of the scissors, or the shuttle screwdriver, and push the point in, then turn the side of the forepart over ; pull away the edge of the flap, and sew under the point through the silesia ; the other side should be done in the same way. Sew round the pocket, which is complete.

The corners on the right side are stitched after canvasing, and an additional strip of linen is placed at the back of the forepart. The complete flap is shown on Diagram 135.

If a pocket facing is put under the flap this has to be stitched on to the top part of the silesia before the top braid is sewn to the flap. Before making any attempt to put this pocket in, it would be as well to become familiar with the method of procedure theoretically, so that when the actual putting in of the pocket is undertaken there shall be no uncertainty or hesitation in the matter.

This pocket, difficult as it may appear at first sight, is only a preliminary to the higher stages of bound and corded work and outside breast pockets.

PIPED-BOUND OUT-BREAST POCKETS.

In the making of a piped-bound welt, or outside breast pocket, the welt must first of all be cut both in length and width the exact shape desired, with an allowance for a seam to sew on the welt. The machinist will then place one-half of the silesia, or pocket, on the bed of the machine, with the round part from him, and the point of the pocket towards the left arm.

The dotted and short lines on Diagram 136 show what is intended to convey. On the silesia, and level with the edge of it, place a strip of linen ; this is represented

by the thick line on the same diagram. On this linen and silesia place the welt (see Diagram 136) a little way from the top.

Take the braid in the left hand and sew it on the welt, beginning from where marked X 1, and sew it as far away from the edge of the welt as the width of piping required.

When reaching the first point of the welt, stop, lift up the needle, and make a small pleat with the braid, as shown by the arrow. Then sew the braid across the top welt, and when the other corner is reached make a similar pleat, as shown by the arrow.

The dotted lines on the welt represent the sewing on of the braid.

When commencing to sew, leave out a piece of braid at point X 1, and a similar piece at point X 2 (see Diagram 136).

Now the braid is either felled over on the wrong side, or the piping is formed by the machinist in turning the braid over and stitching it down in the seam, where the braid was sewn on. Before this can be done, either by hand or machine, the surplus silesia and linen, around the sides and top of the welt, has to be cut away, level with the edge of the welt, as marked 1, 2, 3 and 4.

When the welt is either felled by hand or stitched in the seam, it will be as represented on Diagram 137.

The welt is now ready to be sewn on to the forepart, but before this can be done the silesia at the corners of the welt has to be notched, in the first instance on the right side, as shown by the lines marked D D, on Diagram 137; then turn over on the wrong side and notch the silesia at the side of the welt, just sufficient to allow a seam of the welt to be sewn on.

A glance at Diagram 140 will reveal what is meant by the notch.

When notching the corners of the silesia, as shown on Diagram 137, lift up the piece of braid which is allowed on the welt. Do not notch that, as it is required to be left on and to be sewn with, to prevent fraying out after the welt has been finished.

The pocket-mouth should be marked with chalk.

To sew on the welt to the forepart, push away the silesia from the edge of the welt, and sew the latter on from one edge of the braid to the other, the usual seam.

The pocket facing has to be sewn on in the same manner as for a stitched welt (see previous letterpress description in connection with Diagram 105).

The pocket-mouth is then cut open by the machinist and notched at the corners of the welt and pocket facing, in the same way as for a stitched welt. After it has been pressed open and returned to the machinist, the silesia is pulled through the pocket-mouth. Lay the welt down in shape and make a chalk-mark at the sides and top of the welt, as marked, respectively, 1, 2, 3 and 4, on Diagram 138.

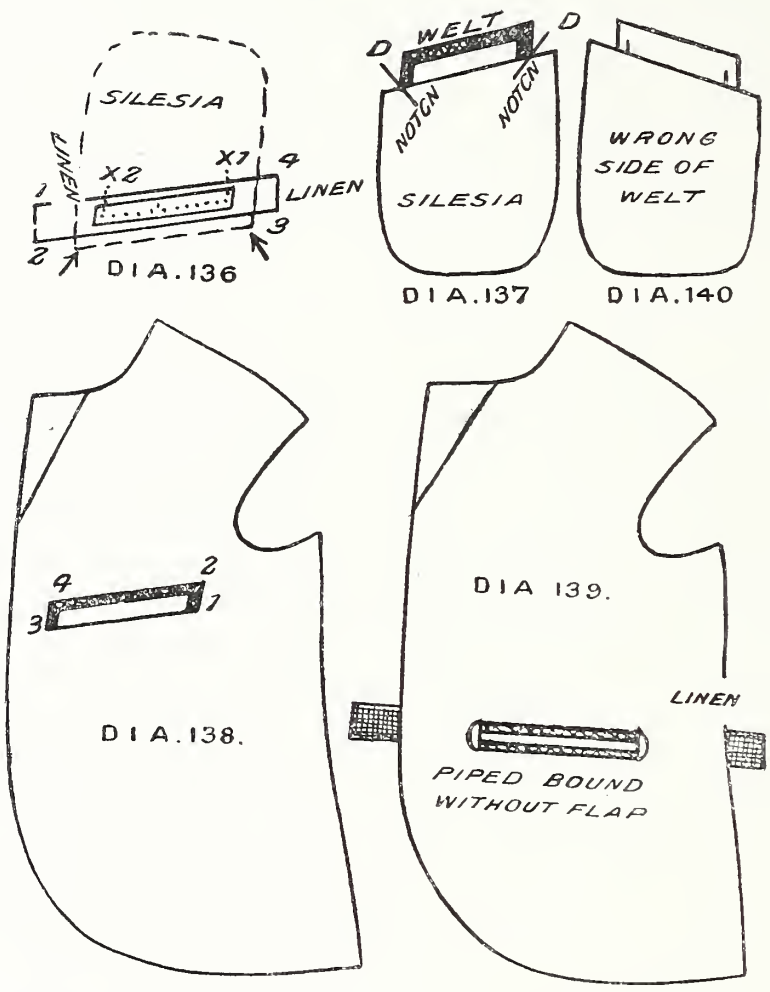
The sewing of the welt under at the sides, instead of felling it down, comes next, and must be done with care. Turn the forepart round so that the shoulder is towards the operator. Take hold of the welt in the centre with the first two fingers of the left hand, lift it over towards the left hand and place the edge of the braid level with the chalk-mark at side and top, as previously marked, and stitch the fine edge of the braid, beginning from the seam to the point of the welt; tack it, and break off the silk.

Now turn the forepart round so that the bottom is towards you, and proceed with the front side of the welt in the same manner as the back; then sew the pocket round.

The corners are completed by stitching in the seam of the braid at the side, also at the top pleat, and this is generally done after the canvas has been basted on the foreparts, and is ready for closing the sideseam.

When it is desired that the breast pocket shall be finished before the canvas is put in, then place a double piece of linen under the sides of the welt when tacking.

In the better-class work the sides of the welt are felled down to represent the welt being made by hand; but the general public, as a rule, do not know, nor do they care, whether it is made by hand or machine, so long as the work is neat, clean and durable.



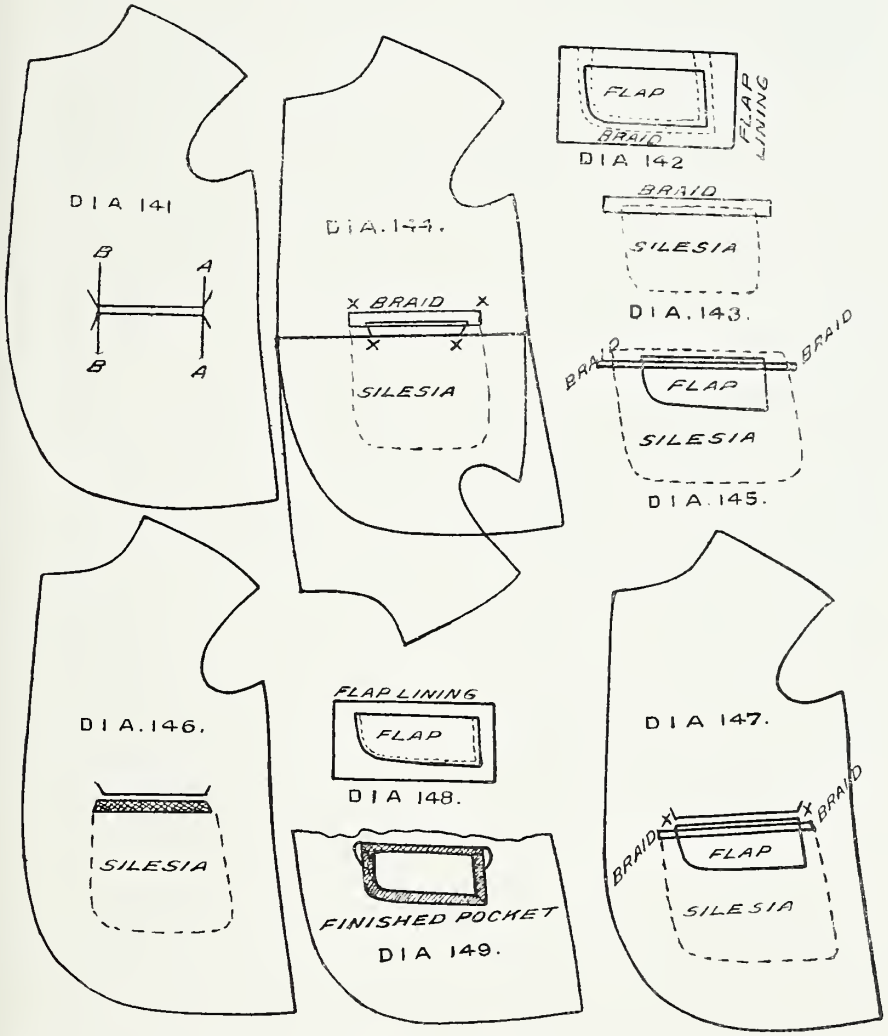
The piped-bound pocket without a flap is easier to make than the welt just described, and with the description to refer to, the details will be more readily mastered.

The pocket-mouth is marked as usual by the fitter-up, and cut open by the machinist and notched at the corners, in a similar manner to that described in connection with Diagram 131. Next sew a piece of braid on one-half of the silesia, as shown on Diagram 132. Sew the braid on the forepart in a similar manner to that described in connection with Diagram 133. also a piece on the top.

Stitch out the under pocket-mouth to form the piping.

On the other half of the silesia sew on a piece of pocket facing.

Turn the forepart on the wrong side; place the silesia with the pocket facing on the underpart, leaving out ½-in. of the facing on the top, and sew the pocket round. Double the forepart over on the wrong side, as shown on Diagram 134 in previous chapter, and sew the braid on to the facing at a point level with the edge of the top pocket-mouth.



Then turn the forepart over on the right side, and with the point of the scissors push the corners in and sew under.

The corners of the pocket are completed after the canvas has been basted on and linen put at the sides.

When the pocket is completed, the result is as depicted on Diagram 139.

STITCHED-ON BRAID.

In continuation of the subject of pocket making, the next process to touch upon is that of "stitched-on braid," which is distinct from flat-braid. In the piped bound pockets described in previous chapters, the braid is sewn on to the material as if it were an ordinary seam, with the difference that the braid is sewn on the edge. In the case of stitched-on braid, however, it is stitched on flat, on the front edge of the braid, half of which is on the right side, the other half being on the wrong side.

The method of putting in the pockets in stitched-on braid is also different to pipe-bound, as will be observed as we proceed.

The first thing to make is the flap. There are, however, two ways of making it. One is where the braid is stitched on the right side and felled over by hand on the wrong side. This method is generally adopted in the better-class trades. In the cheaper trades, where hand-work is eliminated as far as possible, the flap is made entirely by the machine, thus saving the time and labour of felling.

The description immediately following, however, refers particularly to the first method, where the braid is felled by hand.

The flap is first slightly soaped on the wrong side in order to keep it firm on the lining, or, better still, it is basted on the lining.

A glance at Diagram 142 will show that the thick square line is the flap lining; upon this is placed the flap, which is indicated on the same diagram. Place the flap on the bed of the machine. The braid has to be stitched on from the left-hand side of the flap. It will be noticed, from the dotted lines on the flap, that half of the braid is on the flap and the other half off it.

Take the braid between the first two fingers of the left hand; place half of the width on the flap as shown on the diagram, and stitch the braid on with silk, a small stitch on the first edge of the braid.

The point of the second finger of the left hand has to be used as a gauge for felling the width of the edge of the flap and the edge of the braid which is being stitched on. This is done by placing the point of the second finger on the braid, whilst the braid is being held slightly between the thumb and the second finger, and whilst the machine is in motion in stitching on the braid. At first it may seem difficult to perform this double operation at the same time, and whilst the machine is in motion, but practice will render it comparatively easy.

When once the width of the flap to stitch on the braid is begun, a deeper one must not be taken during the process, otherwise it will necessitate cutting a portion of the flap away, and the edge will be crooked.

A glance at the dotted lines on Diagram 142 will explain what is meant.

On reaching the point shown by the arrow, stop the machine, lift up the needle, and make a small pleat in the braid; insert the needle in the corner of the pleat and re-commence to stitch the braid down the side.

In starting and leaving off stitching on the braid, leave a piece of it out at each end, as shown on the diagram.

Here a word of explanation must be given pointing out the distinction between sewing on the braid for pipe-bound, and the stitching on of the braid.

In the former the braid has to be turned over to form the piping, and for this purpose the braid has to be slackened or eased on the round of the flap, so as to give ease at that point. But in the case of the stitched-on, the braid is not turned over in the same manner as for pipe-bound; therefore there is no need for easing on the braid on the round. It is important to bear this in mind, for if by mistake the braid is slackened on the round of a stitched-on braided

flap, the result will be that, after it is felled and pressed out, the edge of the braid will appear irregular, instead of even and firm.

The second method of making the flap referred to, which consists in stitching the braid on, and making throughout by the machine, now comes under consideration.

Diagram 148 represents the flap to be made by machine. Place the flap on the lining and stitch it round the raw edge, a little less than half the width of the braid, Turn the flap over on the wrong side, and the shuttle-stitch on the wrong side of the flap is the guide for stitching on the braid. Take the braid between the two fingers of the left hand, as usual, and stitch it on its edge on that machine-stitch. Cut round the flap lining level with the edge of the flap. Now stitch the braid on the edge, on the right side of the flap. It should be observed that this stitching of the braid covers the previous stitches of the braid on the wrong side of the flap. This is regulated by the point of the second finger of the left hand. In bound work this finger plays a prominent part.

The braid must neither be kept tight nor loose, but stitched on as it lies on the flap and passes through the two fingers of the left hand. The flaps are pressed and marked on the right side the actual width required.

The putting in of the pockets forms the next process.

The first stage consists in cutting open the pocket-mouth the exact length of the flap after it is made up, the corners of the pocket-mouth being notched obliquely the same width as the braid on the flap (see Diagram 141). Next take one-half of the pocket, or silesia, and stitch the braid on that, but leaving out half the width of the braid, as indicated on Diagram 143. The dotted lines represent the silesia, and the thick lines the braid.

Take the forepart and double over on the wrong side, with the pocket-mouth acting as the centre, as illustrated on Diagram 144. Place a strip of linen between the cloth and the silesia, and stitch the edge of the pocket-mouth on half of the braid, as shown on the same diagram. Break off the top silk, but not the shuttle ; turn the forepart round so that the shoulder and lower part of the forepart is towards the wheel. Then bring the braid over from X X to X X, and stitch down to forepart.

This completes the under pocket-mouth, which is clearly illustrated on Diagram 146. The top part next needs describing.

Place the flap on the other half of the silesia, as depicted on Diagram 145 on the chalk-mark of the flap ; sew on a piece of braid less than of the width, and leave out a piece on each side.

Now take the forepart (Diagram 147) ; place it on the bed of the machine with the lower part towards the wheel, the pocket-mouth to be under the needle.

Take the flap (Diagram 145) and bring it through the pocket-mouth, whilst, at the same time, smoothing the silesia downwards. See that the corners of the flap at each side fit into the corners of the pocket-mouth, then stitch the top edge of the pocket-mouth raw edge on to the stitching of the braid on the flap, as indicated by the X at each end of the pocket-mouth, on Diagram 147.

Break off top silk ; lift up the needle ; turn the forepart round so that the shoulder is towards the wheel, and stitch the braid over on to the forepart. With the points of the scissors push through the braid left out at each side of the pocket-mouth, both top and bottom. The corners have now to be sewn under to complete the pocket. To do this, turn the front edge of the forepart over at the side, full length, and sew under the little tongue which was formed by the slanting notches on Diagram 141.

B B, on Diagram 141, are the points where the tongue is to be sewn under. Proceed the same at the sideseam, and sew under at point A A.

The sewing under of the tongue at each side has to be as close to the flap as possible, but without sewing the flap with it. Push the flap aside whilst sewing under the corner, and furthermore, avoid making any pleats on the forepart when sewing under the corners. To prevent the latter contingency, sew the corners under at the edge of notches. The corners are notched slanting instead of straight on the right side, in order to avoid pleating, all of which conduces to a clean corner.

Diagram 149 portrays the completed pocket.

Facility in making these clean corners will greatly assist the machinest in understanding how to make a bound Morning Coat or Frock Coat back by machine, when that advanced stage is reached.

BOUND WELT POCKET.

In order to make this section of the subject complete, the stitched-on bound welt pocket must be included in the chapters dealing with pockets.

There are two methods of making this bound welt : One is to stitch the braid on the right side on the welt and have it felled over on the wrong side ; and the other is to make it complete by the machine. Whichever method is adopted the result will be the same before the welt is sewn on to the forepart. The only difference is in the amount of time saved when done entirely by the machine. As a matter of fact, in the better-class trades the machine method is adopted, because all the handwork in the welt is practically hidden from view when hand labour is put in, hence the former is more generally adopted.

Dealing, however, with the process of making the bound welt partly by machine and partly by hand, a glance at Diagram 151 will show that one-half of the pocket has the bottom away from the machinist. Place it in that position on the machine, with the point of the pocket or silesia towards the left arm ; upon the pocket arrange a strip of linen level with the top, which is indicated on Diagram 151, and upon this place the welt, which must be cut the exact size. The welt is shown on the diagram. Take the braid in the left hand and place it between the thumb and second finger. Begin to stitch on the braid from the point marked O, on Diagram 151.

The width of stitching on the braid on the welt depends upon the width of the braid required on the right side. If, for instance, the width is to be half of the braid, then that amount of braid should be left out towards the left hand. If the braid has to be more than the half on the right side, then less of the braid has to be out for felling. The width required must first be ascertained.

In commencing at point O, a piece of braid should be left out, as shown by the dotted lines on Diagram 151. This is done to prevent an extension towards the edge of the braid fraying out before the welt is sewn on.

When the point of the welt is reached, stop the machine ; lift up the foot take out the needle from the braid and make a small pleat. This pleat is best formed by letting the point of the small scissors, as used by the machinist, or the point of the shuttle small screwdriver, rest on the point of the welt. Form the small pleat with the thumb and first finger of the left hand, then withdraw the point of the scissors and stitch the braid on across the top part of the welt. When reaching the second point of the welt make a similar pleat and stitch the braid down the side to point 2, on Diagram 151, leaving out a piece of braid there.

The tailor or tailoress whose duty it is to fell the welt on the wrong side will cut round the surplus linen and silesia as far as edge of welt. When this is done, and the welt smoothed out, the result is as represented on Diagram 152.

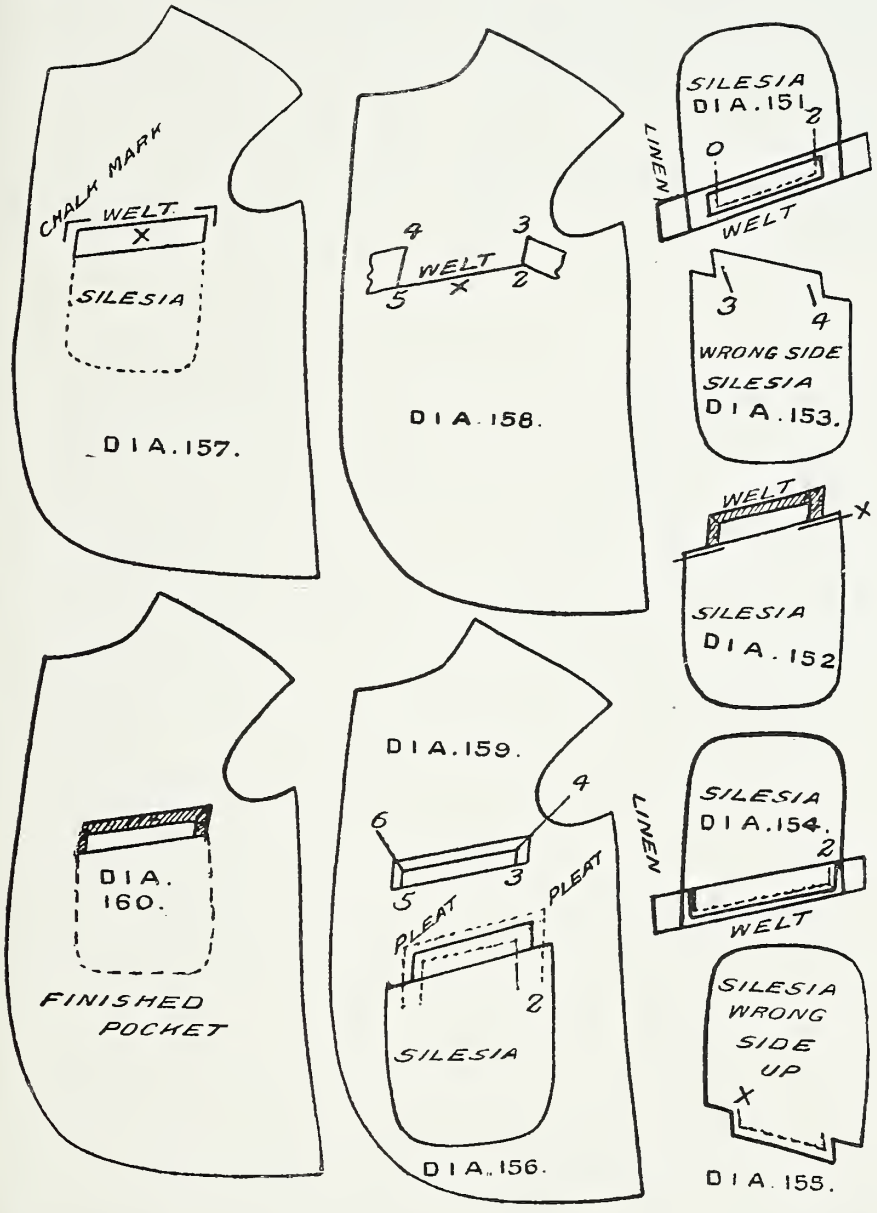
Before the welt can be sewn on to the forepart the silesia has to be notched at the edge of the welt as far as the braid ; this is indicated by the thick line marked each side by a X, on Diagram 152.

In notching the silesia, lift up the piece of braid previously left out and for sewing with. The silesia at the side of the welt, and hence next to the braid, must also be notched the width of the seam to be sewn. This is done by turning the pocket and welt, illustrated on Diagram 152, over to the

wrong side, which is represented by Diagram 153 ; the short thick lines at the side, marked 3 and 4, being the notches.

The welt is now ready for sewing on to the forepart. Before, however, this is done, perhaps it will be best to describe the second method of making the welt entirely by the machine.

When this is done, turn the silesia and the welt over on the wrong side, as shown by Diagram 153, and the dotted lines on that diagram represent the shuttle stitches of the sewing machine. By these stitches having obtained the width of the braid for the right side, it forms a guide for stitching on the braid.



Place the silesia with the bottom from you, and the point towards the left arm ; upon that place a piece of linen, and on that arrange the welt.

Now, beginning at point 2 of Diagram 154, stitch the welt round raw edge as shown by the dotted lines on the diagram, and the width of the braid required on the right side.

Place Diagram 155 on the welt and silesia, which represent the same on the machine, and stitch the braid on those stitches from the point marked X. At the point marked with an arrow make a small pleat.

Before the braid can be stitched over on the right side the machinist must cut away the surplus of linen and silesia level with the edge of the welt. This done, turn the silesia round with the bottom from you, and place under the needle.

On Diagram 156, dotted lines on both the inside and outside of the welt are shown. The inside lines represent the stitches of the braid which was stitched on the wrong side, and the outside dotted lines represent the other edge of the braid. Bring the outer edge of the braid, marked 2, just a little over the inside dotted lines, and stitch the braid down on the first edge.

When reaching the points form the pleat, which is marked on Diagram 156. These pleats are best formed with the point of the small scissors, and the second finger on the left hand has also to be brought into play for this purpose, and to assist in the formation of the pleat. The result of this method is the same as represented by Diagram 152.

The notching of the silesia at the bottom of the welt and the sides, as described above, must be done before the welt can be sewn on. The next thing is to sew on the welt and the pocket-facing, and cut the pocket-mouth open, all of which must be done in accordance with the instructions given in connection with Diagram 105 in a previous chapter. The welt is then pressed open, and the two halves of the pocket pulled through the pocket-mouth.

Diagram 157 represents the welt ready for sewing under the sides. In order to be quite accurate, make a fine chalk-mark at the side and top of the welt as shown, close to the edge of the braid, on Diagram 157. Then turn the forepart round with the shoulder towards you. Place the second finger of the left-hand on the centre of the welt, where X is marked, and bring it over towards the left.

Now place the edge level with the chalk-mark and stitch down the braid very fine on the edge, as indicated on points 2 and 3, Diagram 158. Turn the forepart round with the bottom towards you, and again place the finger in the centre of the welt ; arrange that side also level with the chalk-marks previously made, and stitch the braid on the edge, as shown by points 4 and 5 on Diagram 158. Sew the pocket round.

The tacking down of the welt can either be done through the canvas, or before the canvas is basted on, in either case the tacking is done by stitching down the braid on the edge, commencing at point 3, Diagram 159, and at the pleat hard next it, but not on the pleat, as shown by point 4 on the same diagram, and the front side the same from points 5 to 6.

Diagram 160 shows the finished welt of stitched on braid.

CORDED EDGE WELT POCKETS.

The making of corded pockets and welt by the sewing machine is the next stage in the science of machine work to which the

machinist, with the knowledge already gained, should devote special attention.

To the hand-sewing tailor the sewing on of the cord by the sewing machine appears very difficult and puzzling, as the cord is round, and the pressure-foot flat, and the point of the needle has to penetrate the circular cord, and sew it on to the material. Difficult as this may seem, it is not only possible, but, with practice, comparatively easy of accomplishment. Moreover, the stitches on the cord became almost invisible when the tensions are properly regulated.

In a large factory where a quantity of corded work is done, special cording machines are in use, with attached appliances for the cording, which executes the work with ease and facility. This applies particularly to the edges when the garment is completed.

In this book, however, we are dealing not with the well-equipped factory with power-driven machines, but with the ordinary tailor's workshop where the sewing machine has to serve all purposes, and where a cording machine, or special appliances for making corded pockets and welts, do not find a place. What, however, is required is a plain, simple device, the outcome of the idea of an ingenious machinist.

In dealing with the subject of " Bound and Corded Cuffs," an illustration appeared (Diagram 39) of a single foot machine attachment, with a groove slightly filed out just half the width of the cord generally used in gentlemen's garments. This groove is all that is required for preventing the cord from shifting while under the foot, and during the transit of sewing it on, which is done just like an ordinary seam.

When cording is not required, the same foot can be used for ordinary work ; the groove being cut out will in no way interfere with the ordinary sewing. Any mechanic will file this groove for a few pence.

Those who have followed the instructions contained herein have acquired some knowledge of how to handle cord, as the details of making corded sleeves by the machine were given in connection with Diagram 40.

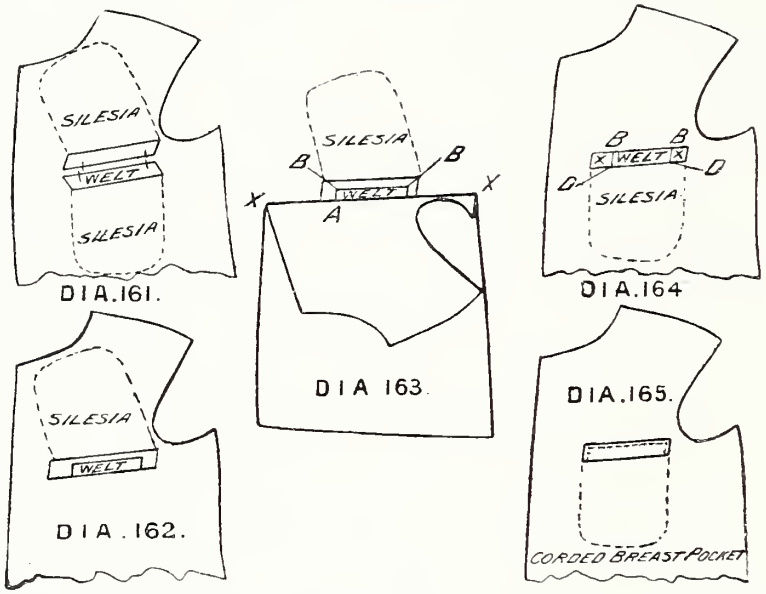
In the previous chapters the making of the skirt pocket was dealt with first, followed by the welt. In the present instance the process is reversed, and the making of the welt is first described, then the pockets. Why this order is followed is because the making of corded flap pockets is more difficult than the making of the welt, and it is always better to proceed from the simple to the complex, than the converse.

The welt in this instance is not cut the exact size, the same as for bound work. It is cut a little longer and wider, something after the method of a stitched welt. The exact length of the pocket-mouth is, however, marked on the forepart with chalk.

To proceed, the welt is sewn on with a piece of linen from point to point, as shown on Diagram 161. The forepart is then turned round and sewn on to the facings, beginning from the back, and where the sewing on of the welt ends, and sewn on to the facing within an eighth of an inch from the welt (see diagram, where the points are marked with a short dash).

The pocket-mouth is cut open in the centre from point to point of the facing, and the corners are notched for pressing open. The two halves of the silesia, top and bottom, are then sewn on. This is the first stage.

After the welt has been pressed open the top half of the pocket is pulled through the mouth, and the lower half of the pocket brought upwards, as shown on Diagram



162 ; the welt is then marked with chalk the exact width required, as shown by the thick line marked " Welt," on Diagram 162.

In order to sew on the cord to the welt the forepart has to be doubled on the right side, level with the seam of the welt, as indicated on Diagram 163 by the X at each end of the forepart.

The forepart must be turned round in such a position that the front of same is towards the wheel. The welt is then placed under the needle, and the cord on the chalk-mark, beginning at the point marked. The foot is put on the cord, taking care that the groove is on the cord. After loosening the pressure-foot slightly, say one turn towards the left, the cord is sewn from point A to the corner of the welt marked B (see Diagram 163).

At this point the foot and needle are lifted up, and the forepart turned to the left. The cord is pushed a little forward, the foot dropped on the cord again, and the cord stitched across the top part of the welt, when the other corner is reached, marked B. The next operation is to stop, lift up the foot and needle, push the cord a little forward, and stitch the cord down the side as far as the seam.

When commencing to stitch on the cord at point A, about $\frac{1}{4}$-in. of cord should be left out at that point, and the same length at the other end. The object of pushing the cord a little forward at point B is to obtain a pointed corner when the welt is completed.

After the cord is stitched on as described, the welt is notched slanting at the corner marked B, as far as the cord, and as shown on the lines marked B B, on Diagram 163.

The welt is next turned in so that the top part of the cord forms the edge, and stitched behind the cord an eighth of an inch, then in the seam of the welt to keep the silesia down, or on the seam on the wrong side.

At each side of the welt the silesia is notched as marked D D, on Diagram 164, and pulled through the pocket-mouth as indicated on the diagram. The portion of the welt marked X X at each side, on Diagram 164, is the surplus.

The pocket is sewn round, and the forepart placed on the machine with the bottom towards the operator. Then the surplus of the welt turned in and stitched in the seam of the cord through the forepart. The forepart is turned round, and the same operation proceeded with on the other side.

Continuing, all the surplus from the inside of the pocket-mouth is cut away within an eighth of an inch, and stitched down the sides the same width as the top is

stitched ; also a couple of stitches are put in across the corners of the cord at point B, by way of a tack.

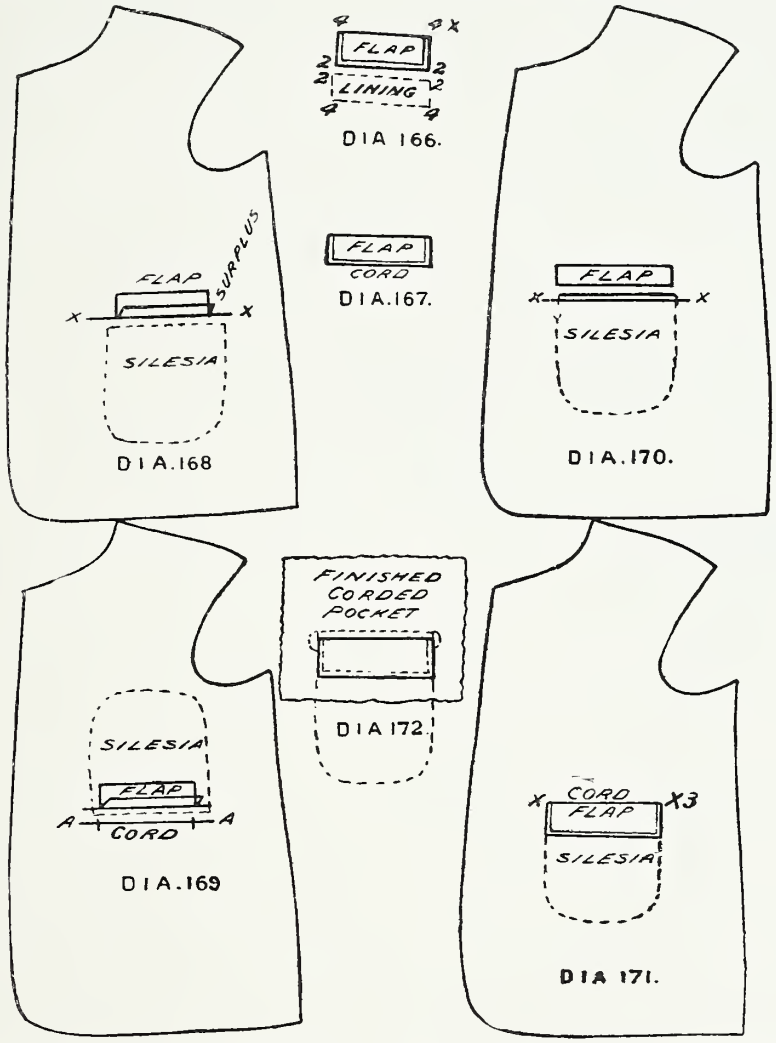
When turning in the surplus at the sides the little piece of cord, which is left out when stitching same on welt, is pulled through. When sewing round the pocket this piece of cord is pulled sideways, and sewn in with the pocket.

The pocket is now complete, as represented on Diagram 165. The tacking at the sides can be done through the canvas if preferred.

It is assumed the reader thoroughly understands what is meant by cutting out a groove under the pressure-foot, so as to admit the cord passing through with ease, as previously described.

To proceed, in the first place the flap and lining have to be cut as for a stitched flap. A glance at Diagram 166 indicates thick lines marked 4 and 2 on the outside edge of the flap. The thin lines inside the flap represent the cord, and the broken lines underneath, the flap lining.

The first thing to do is to sew on the lining, marked 2 and 2, to the bottom edge of the flap, similarly marked 2 and 2, but the sides must be left open for a time.



The whole procedure appears rather complicated and difficult, but with the help of the diagrams at the various stages of the process, the making of this welt is rendered fairly easy.

CORDED POCKETS.

In the last chapter the making of a corded edge welt pocket was described, and the present one deals with the putting in of corded pockets by the machine.

The flap is arranged with the point marked 4 X under the needle (see Diagram 166). Now take the cord in the left hand, place it on the flap $\frac{1}{8}$-in. from the edge, and stitch on the cord from point 4 X to point 2 : then lift up the foot and needle, but don't break off the silk.

Turn the flap round ; push the cord a little forward and sew it on the bottom of the flap the same width up to point 2 ; lift up the foot and needle as before ; push the cord forward and stitch it down from point 2 to 4. Then cut off the cord level with the edge.

In sewing on the lining to the flap at the bottom keep it a little tight, and when stitching on the cord pull the flap in gradually with the right hand. Having done this, bring point 4 of the lining to point 4 of the flap (see Diagram 166), and sew down the sides of the flap with the lining and the wheel, and let this sewing be as close to the cord as possible.

The shuttle-stitch of the cord is the guide for sewing the sides down evenly and next to the cord.

Now turn the flap out and break out the edge, so that the cord will be the edge of the flap. Stitch the flap, next to the cord, $\frac{1}{8}$-in. wide, as shown on Diagram 167.

In practically every case there is a row of stitching next to the cord, even when put on by hand ; that is why the stitching next to the cord is mentioned.

As a rule the flaps are pointed, as seen by Diagram 167 ; but where the flaps are rounded off on the front side, the same principle of sewing the lining on to the bottom first holds good. The flaps are smoothed out and marked on the wrong side the exact width required. This is the first stage.

Next place the forepart under the machine right side up, with the bottom towards the wheel.

A reference to Diagram 168 shows the pocket-mouth, marked X X. Under this line place a strip of linen, and on the line or chalk-mark place the flap wrong side up.

Put the flap in the position of the mark, and sew the flap to the forepart on the chalk-mark of the flap and forepart. Then lift up the surplus of the flap, as shown on Diagram 168 ; turn in the silesia and sew on, under the line marked X X, $\frac{1}{8}$-in. apart. Break off the top silk and turn the forepart round so that the shoulders will be towards the wheel. Lift the silesia over, as shown on Diagram 169, and under the seam of the silesia $\frac{1}{8}$-in. from that seam ; stitch on the cord from one point of the flap to the other, as shown on Diagram 169. Line A A represents the cord.

In stitching on the cord leave out about $\frac{1}{2}$-in. of each side, as shown on Diagram 169, line A to A.

The next thing is to cut the pocket mouth open in the centre. In doing this cut it open within one-sixteenth of an inch at each end of the flap.

Now pull the silesia through the pocket-mouth and make the cord, previously stitched on, the edge of the under-pocket, and stitch next to the cord, the same width as the flap. Also pull through the cord at

each end, so that they will be on the wrong side instead of on the right.

The thick line under the flap on Diagram 170 represents the cord, and the edge of the under-pocket the thin line, marked X X, is the stitching under the cord.

Now turn the forepart over on the wrong side and sew on to the flap the other half of the silesia. This is done by placing the edge of the silesia level with the flap, and sew it across in the same stitching of the flap which was sewn on to forepart, and then sew round the pocket.

Turn the forepart on the right side and place it under the needle, with the bottom towards the wheel, and at the point marked X 3 on Diagram 171.

The line marked X X becomes the seam where the flap was sewn on, in Diagram 168.

Bring the flap out of the pocket-mouth.

Hard in that seam stitch on the cord, from point X 3 to X, Diagram 171, leaving out at each corner about ½-in. of cord. Bring these ends under the flap and pull them through at the side of the pocket-mouth. Stitch across the top of the flap the same width as the flap, and stitch the round at the corners of the flap to complete the pocket.

If desired, this last stitching, also the corners, can be done through the canvas. If it is not, then a piece of linen must be placed at each end of the corners of the flap when stitching the round, sufficiently long enough to reach the sideseam and front edge.

Diagram 172 is the complete corded pocket without any touch of hand-work.

It must be understood that the front edges of the garment cannot be done in this way by the machine. In the absence of a cording machine, such as used in the wholesale trade, the edges of the garment in a small tailor's workshop must be put in by hand, and the stitching next to it is done by the machine.

To go into the question as to why the cord cannot be put on by the machine in the same way as the pockets are put in would take up too much time, and serve no useful purpose, therefore we refrain.

Without, however, attempting to describe the cording machine, it may be remarked in passing that the cord is put on after the garment is pressed off, with the aid of what is known as the "thrower," beginning at one point at the bottom of the garment, and going right round including the lapels and collar, until the point is reached again when a few stitches by hand complete the job.

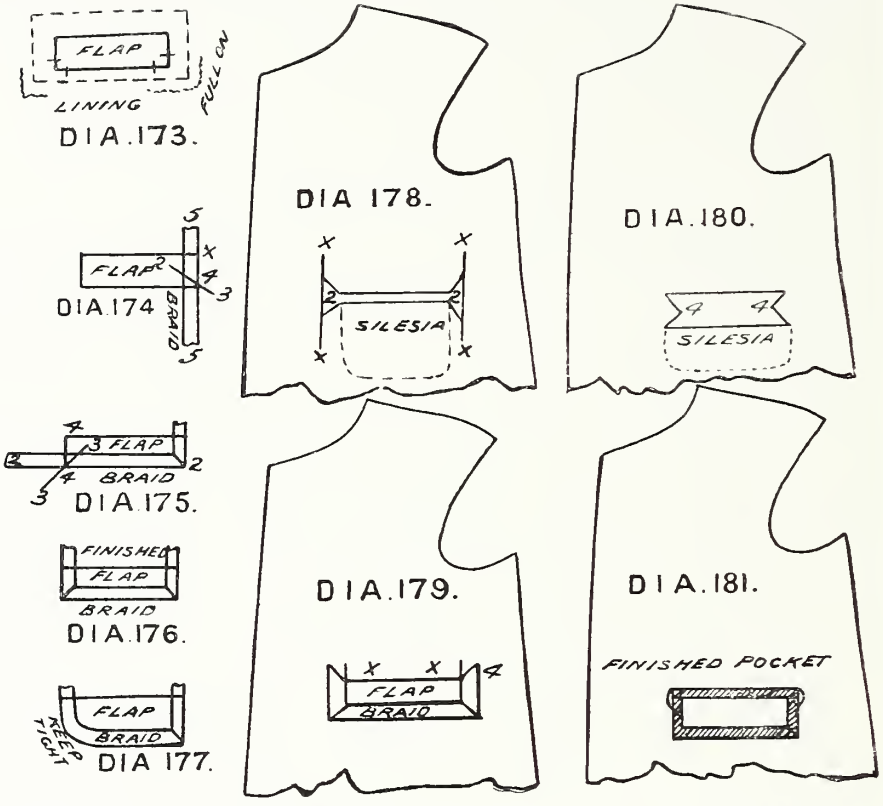
The retail bespoke tailor must perforce be content with his sewing machine with single-foot attachment, and make it answer the purpose of a cording machine.

FLAT-BRAIDED POCKETS.

The making of flat-braided pockets by the sewing machine is the more advanced stage of bound work, and rather more difficult than other bound work, owing to the complications in making the points, or the cushions at each end of the flaps.

Flat-braided jackets, as a rule, have pointed flaps, instead of one side rounded off; but where this is the case only one cushion has to be made. The two pointed flaps, however, are first described, as being the more complicated.

It is assumed, of course, the machinist has followed the preceding chapters in this series, and therefore is quite prepared for the next stage.



Once having mastered the details of making flat-braided flaps, a better insight is gained of how to make a flat-braided outside breast pocket, also a flat-braided Morning Coat or Frock Coat back, which will be dealt with later on.

Diagram 173 represents the flap and lining, which first have to be sewn round in the following manner:

Place the lining, which is represented by the dotted lines, on the drop-feed, and upon that the flap.

Sew round the flap a narrow seam, but when nearing each corner full on the lining both at side and bottom of flap, at the points, where a short dash is marked. The fulling-on, it will be observed, is represented by zig-zag lines at the corners of the flap, Diagram 173.

Why the lining is fulled on is because, when the flap is basted out a narrow piping of this lining has to be formed on the right side of the flap, all round the edge, and if the lining is not fulled on at the corners it becomes contracted after the braid is on, and the corners will constantly curl up. It should be particularly noted what is said with regard to this lining being basted over on to the flap instead of the reverse way, as for a stitched flap. The reason is that this method gives a much thinner edge; whereas the other way of basting would give double cloth at the edge, which would result in a clumsy looking flap. Besides, it looks much cleaner and more workmanlike on the wrong side of the flap, instead of having cloth and lining on the wrong side.

After the flap has been thus basted out, and smoothed out with a semi-hot iron, it is ready to receive the braid.

Diagram 174 is the flap already basted out.

Place the flap under the needle at point 5 Diagram 174. Points 5 and 6 represent the braid. Take the braid in the left hand and stitch the edge of the braid to the edge of the flap, beginning at the point marked X on the same diagram. Always use a fine silk, of course, say No. 36.

Stitch from X to point 4. Look carefully

at the diagram, as the most intricate part, *viz.*, the cushion, has now be formed.

From the bottom edge of the flap as a pivot, turn the braid over so that the braid at point 5 at the bottom shall reach point 5 at the top.

Mark off with chalk the width of the braid from the bottom edge of the flap on the inner side, as shown on line 2, Diagram 174, and stitch down the braid whilst on the double, from the corner of the flap, marked 4, to the chalk-mark previously made, and marked 2 on the diagram. Stitch this down obliquely, as shown by the lines 2 and 3 on Diagram 174.

Break off the top and bottom silk, and bring the braid over, and the edge of the braid will fall level with the edge of the flap, and the cushion at the corner has thus already been accomplished, and will not require any pricking by hand.

Turn the flap round and stitch the edge of the braid to the edge of the flap, from point 2 to point 4, on Diagram 175.

At this point the braid is brought over double from point 2 to point 2 on the same diagram, marking off again the width of the braid at point 3 on the flap (see diagram), and stitch the braid, whilst on the double, from point 4 to point 3, and as shown on the oblique line from 3 to 3, on Diagram 175. That forms the second cushion.

Now bring the braid back, when its edge will lay itself level with the edge of the flap, and stitch the edge from point 4 to 4.

Next stitch the inside edge of the braid all round, and the flap is complete, as represented by Diagram 176.

It is not an easy matter at first to obtain accurate cushions at the corners, but practice and perseverance will enable anyone to overcome the initial difficulties.

If the flap is rounded off at one side only one cushion is required to be made, and when stitching the edge of the braid on the round side it has to be kept a little tight at that part (see Diagram 177).

The flap is then smoothed out with a cool iron and a piece of linen, and not with the damp-rag.

The flap is marked on the right side the exact width required.

The next stage is to cut the pocket-mouth open and to notch the corners at each end of the pocket-mouth slanting, the width of the braid.

The procedure is as follows :

Place the forepart on the machine table right side up, and make a chalk-mark in the place where the fitter-up placed the marking stitches with basting cotton. Put the flap on this chalk-mark, and mark the length of the flap at each end. From that point measure the width of the braid and make another chalk-mark, as shown on Diagram 178.

The points from X to X are the chalk-marks referred to. Points 2 and 2 are the ends of pocket-mouth, on the same diagram.

Cut open the pocket mouth, from point 2 to point 2, and notch the corners at each end, top and bottom, obliquely, and up to the lines previously marked by the four crosses, as shown on Diagram 178. Now turn the forepart round so that the shoulder will be toward the wheel. Sew one-half of the silesia to the bottom part of the pocket a narrow seam, as shown on Diagram 178 ; turn it over and form a narrow piping of the silesia, similar to that of the flap before the braid was put on ; then stitch in the seam.

Stitch the braid on at both sides of the braid, the same as the flap. In doing this leave out a piece of braid at each end for sewing under. Place the other half of the silesia on the underneath one, leaving out about an inch at the top, and sew round the pocket.

Next place the forepart under the needle right side up with the bottom towards the wheel.

Take the flap and place the chalk-mark level with the edge of the top pocket-mouth, as shown by the X X on the line of Diagram 179.

Bring the edge of the flap hard into the corner of the pocket-mouth, as shown on the same diagram, and stitch down raw edge the top pocket-mouth to the flap.

Take the braid in the left hand ; leave out a piece at point 4, Diagram 179, and stitch the inside edge of the braid just under the raw edge of the top pocket-mouth.

Break off the silk and stitch the other edge of the braid.

After the flap is put in and the braid stitched on, the corners at each end of the flap are prominently exposed, as shown by points 4 and 4, on Diagram 180. This has to be cleared away to complete the pocket. To do this, take the points of the scissors or the shuttle screwdriver and push these points in at each side, and sew them under on the wrong side. In doing this, pull the flap away so as not to catch it.

The corners, or the round at the side of the flap to complete the finish, can either be stitched before or after the canvas is basted in.

Diagram 181 is the finished flat-braided pocket.

FLAT-BRAIDED WELT.

The object of describing the making of a flat-braided outside welt pocket to match the flaps previously described, is because some of the details differ from those already dealt with, in relation to stitched, piped, bound and stitched-on braid work. The knowledge, however, gained by studying the previous instructions should be of great assistance in understanding the more intricate parts of the present article explaining how to make a flat-braided welt.

The first point to observe is that the welt is cut the exact length and width ; this assured, the procedure is as follows :

Place one-half of the silesia pocket under the needle, with the point towards the operator. On this put the welt, as shown on Diagram 182, and sew a narrow seam from X to X, as marked on the diagram. Turn the silesia over on the welt, on the right side, and form a narrow piping in a similar manner to the flap when it was basted out, and before the braid was put on.

Now stitch in the seam to keep the silesia down. This is done instead of basting.

Next place the welt under the needle ; take the braid in the left hand and measure off a piece of braid the length of the side of the welt, and allow in addition a little extra to prevent fraying whilst being worked up.

From this point stitch the outer edge of the braid to the edge of the welt ; break off the top silk ; turn the welt round and stitch the inside of the braid.

Measure off a similar piece of braid at the side, with an allowance of $\frac{1}{2}$-in., and cut off the braid.

The most difficult part of the welt making, *viz.*, the formation of the cushions, or the making of the points, now demands attention.

The back, or the armhole side of the cushion is made first. Place the round part of the silesia with the welt and braid on it towards you. At the side of the welt (marked 1 on Diagram 184), turn the braid over on the double and mark off from 1 to point 3 on the same diagram, the width of the braid. Now stitch the braid whilst on the double, from the top point of the welt, marked 3, to where the chalk-mark has been made. Break off the top silk only, and turn the braid over to the side, and the edge of the braid will be level with the edge of the welt. Proceed to make the cushion the other side of the welt, the same as the back part. Double the braid over at the front side of the welt. Mark off the width of the braid from point 1 to 2, as shown on Diagram 184, and sew down the braid whilst on the double, slanting from point 2 at the top of the welt to point 2 on the welt ; turn the braid over and stitch the inner side of the braid only, also the inner part of the braid at point 3, on Diagram 184.

After forming the cushions as described, the formation of the welt is as represented on Diagram 185.

It will be observed on this diagram that the braid overlaps the seam of the welt. This allowance is made because the braid has to be sewn with the seam of the welt, and there is a likelihood of fraying out during this process, so this is guarded against by allowing $\frac{1}{2}$-in. over the seam.

The welt is now ready to sew on to the forepart, but before this can be done the silesia has to be cleared away to give free scope for the sewing on of the welt; therefore lift up the braid, as marked by the (X) cross on Diagram 185, and notch the silesia the width of the braid. Then turn it over on the wrong side and make another notch at each side, as shown by points 3 and 3, on Diagram 186.

The short lines at these points are the notchings of the silesia to admit of the welt being sewn on.

The next stage is the sewing on of the welt and facing.

Exactly where the welt is to be sewn on is marked, and the welt is placed on this mark and sewn on, including the braid, from one edge of the braid to the other, then the facing is sewn on to within $\frac{1}{8}$-in. from each end, where the welt was sewn on. This is indicated with a short line at each end of the facing on Diagram 187.

Cut the pocket-mouth open from point to point, as marked on the facing. Notch the facing and forepart at this point straight, at the side of the sewing, whilst the fore part where the welt is sewn on must be notched slanting, from point 1 of the pocket facing to point 3 at each side, which is the end of the welt.

Stitch the other half of the silesia to the pocket facing, and have the welt pressed open.

When this has been done, push both halves of the silesia through the pocket-mouth, and the welt will then be in the state represented by Diagram 188.

The sides marked with X on the diagram are open and must be fastened.

The welt looks more finished when the sides are sewn under, instead of the braid being stitched down flat. The latter style looks more like a patch. The welt should look artistic, therefore the sides are made invisible.

To sew the welt under, first make a chalk-mark at the side and top of the welt, as shown on Diagram 188. This indicates the position where the welt should be placed when turned over for sewing under. The armhole side is sewn first, because it has to be stitched down from the bottom to the top, and gives a better opening.

Turn the forepart round with the shoulder towards the operator. Lift up the welt from the centre marked X on Diagram 189, and place the edge of the braid of the welt level with the chalk-mark previously made, and stitch the braid on the edge, as marked, from 2 to 3 on Diagram 189.

Break off top and bottom silk, and turn the forepart round; lift up the welt again at the centre marked by X, and place level with chalk-mark, and stitch down from 4 to 5.

Sew round the pocket and the welt is complete, with the exception of tacking. This is best done through the canvas, when the stitching or tacking is done hard next to the braid at the side of the welt, and in the seam of the cushions, not on them, at points 3 and 3 and 2 and 2 on Diagram 184.

Diagram 190 is the finished welt of a flat-braided Lounge or Morning Coat.

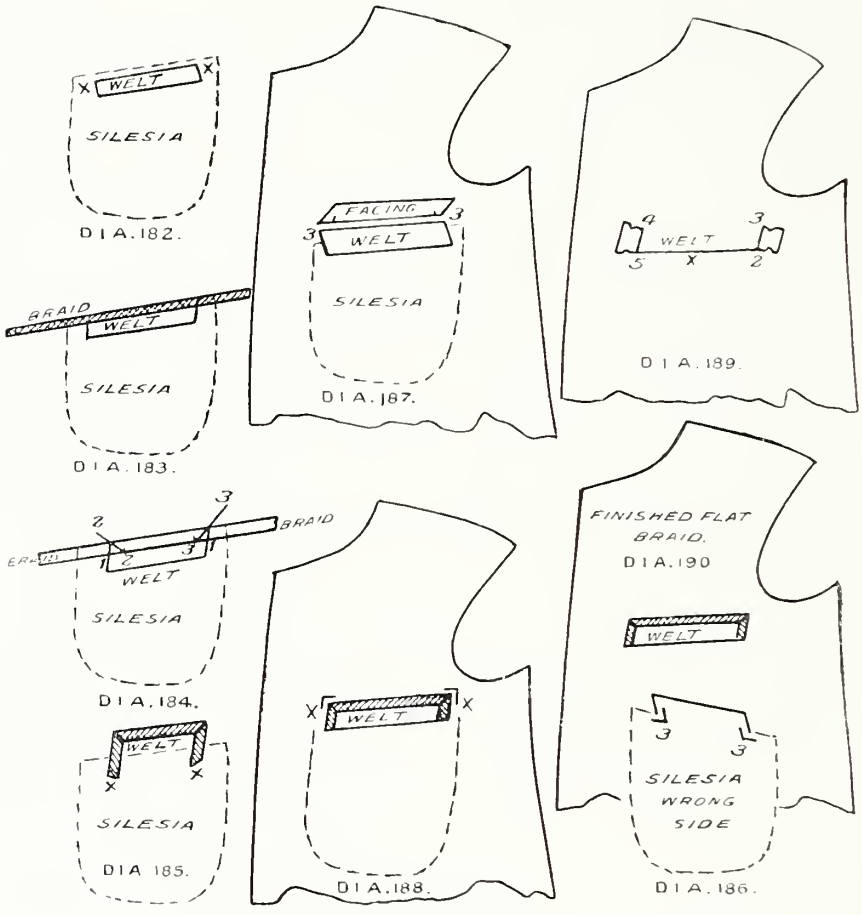
THE STRIPED WELT.

Every machinist knows what a great deal of trouble there is in sewing on a striped welt, and to get it to match at first sight.

If the welt is not sewn in properly in the first instance it has to be taken off, and in some kinds of flannel the marks of the machine needle will, in consequence, be very noticeable.

It frequently happens that in the attempt to match the stripes the welt is sewn on several times after being ripped. This often results in both the welt and forepart getting soiled and dirty, particularly when the material is very light in colour. Sometimes the only remedy for this is a new welt. This is all right when there chances to be sufficient material at hand to cut a new welt, but this is not always the case.

It may be asked, in cases of striped welts, where there is a doubt of matching properly by the machinist, why should not the welt be basted on first and so ensure the stripes matching? But the object of these articles is not to discuss the subject of basting, but rather to show how to dispose of all unnecessary basting, and to so acquire the art of working the sewing machine as to dispense with the assistance of the baster. Apart from this, the basting on of a striped welt is no guarantee that the stripes will match if the machinist does not know the exact position in which the welt is to lie, as it is likely to move a little whilst being sewn on.



Then there is the possibility of further trouble, because the machinist, finding the welt basted on, is so convinced the stripes will match that he makes a smaller stitch to sew on the welt. He makes no allowance for shifting under the foot by neglecting to keep the welt in position although it is basted. This will not do. The sewing on of a striped welt must not, and need not be left to chance as to whether the stripes will match.

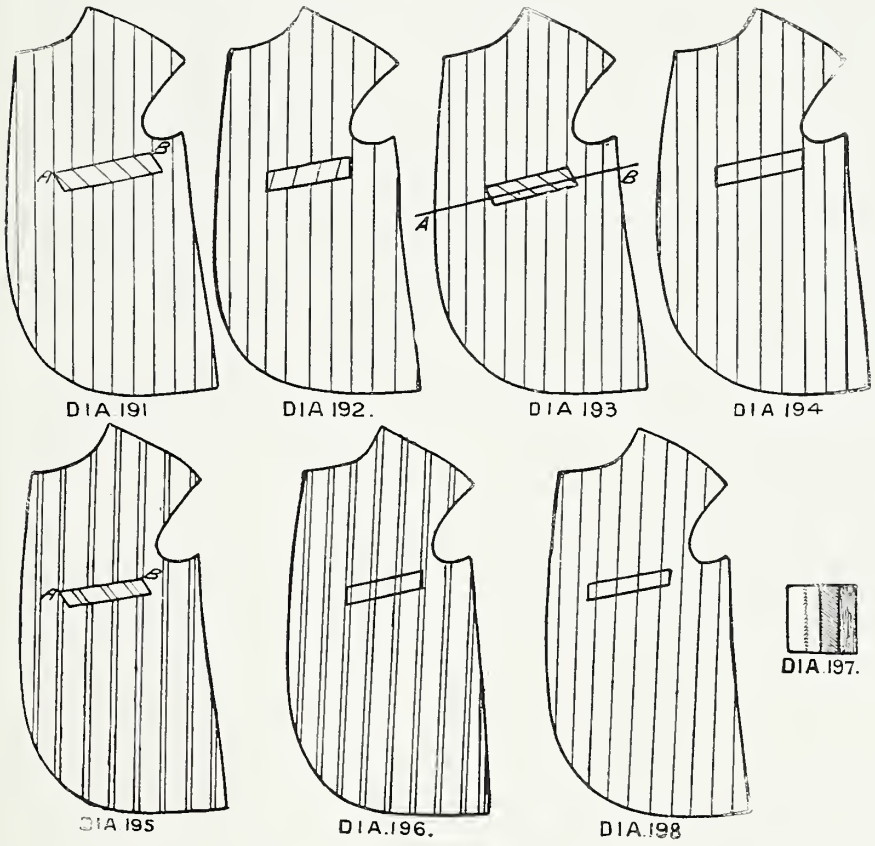
In order to throw some light upon this subject, first observe how the machinist sews on the welt.

On Diagram 191, line A B is the position of the pocket-mouth, and upon this the machinist places the welt.

On the same diagram it will be noted that he matches the stripes of the welt with the stripes of the forepart, in the hope of having it right; instead of which, when the welt is turned up to see whether the stripes match, he only discovers that they do not match, as is shown in Diagram 192.

Why is this? Simply because in sewing on the welt as laid in position on Diagram 191, a seam has been taken away, which is $\frac{1}{4}$-in. below the matched points (A and B, Diagram 191). The conclusion of the matter, then, is that the stripe of the welt must match the stripe of the forepart at the cross points, where the seam has to be sewn, and not at the edge of the welt.

A glance at Diagram 193 will indicate that the stripes of the welt have been shifted from the forepart so that they will meet at the crossing of the seam, as marked on line A B. When this is turned up it will be seen that the stripes must match as shown on Diagram 194. It does not matter how wide or narrow the stripes are if this simple rule is followed, *viz.*, that of matching the stripes at the point or place where the seam is to be sewn, the welt must come all right when finished.



So far only the single stripe has been touched upon, but there are some flannels with a double stripe, or ordinary tweed materials interwoven with a double stripe pattern. It does not, however, make any difference how many connected stripes there are, the same method of sewing on the welt has to be adopted, as suggested on Diagram 193.

On Diagram 195 a design of a fancy suiting with a double stripe pattern is illustrated. It will be observed the welt is placed in the same position as the one on Diagram 193. The finished welt and accurate matching of same are shown on Diagram 196.

The miniature Diagram 197, indicates another design of a worsted material. Here there are eight stripes or twills in the design which have to be matched. At first sight it looks difficult to match, but in reality it is no more difficult than the single stripe of Diagram 193, all that is required are patience and care to accomplish it successfully.

Just a word or two regarding the finishing off of the welt at the sides.

A reference to Diagram 198 will show that the welt is tacked out to follow in the stripe of the forepart, but beyond it. Such welts are frequently seen. These welts should be avoided, and the illustration on Diagram 198 shows how not to finish off a striped welt.

The welt should be sewn on from stripe to stripe, and sewn under in the stripe, so as to have in the finished welt the appearance of Diagram 194.

It may be said in excuse of the welt on Diagram 198 that it is put on so in order to get the required length, but it is far better to have the welt $\frac{1}{4}$-in. longer or shorter than to get the unsightly effect indicated.

What has been said in the foregoing only applies to the sewing on of the welt, on account of it being on the bias. It does not apply to the sewing on of the flap, except when the flap pocket-mouth is cut on the slant. In the latter case the same method must be adopted as for sewing on the welt.

CLOSING WITHOUT BASTING.

The next stage or process in making a garment by the machine, after the pockets are in and the canvas basted, is the closing of the garment without the sideseam being basted for the machinist.

In some workshops the fronts are made up first and then closed ; in others they are first closed and then basted under. But whatever method is adopted the sideseams have to be closed, whether by hand or machine ; here, however, machine sewing only is under consideration.

With many the closing of the sideseam is considered of little importance ; but this is a mistake. It is perfectly true it is plain sewing, but there is a variation to be made during the process of sewing down the sideseam, and where basting is not resorted to, it is this variation that makes all the difference. For example, at the commencement of the closing of the sideseam, or where the back is placed on the forepart to secure the uniformity of the seye, it is of the utmost importance, as regards the fit of the garment, how it is done. As a matter of fact, everything in garment making by the machine is plain sewing : it is the manipulation of the sewing that is not plain. Herein lies the difference.

Furthermore, during the process of the sewing of this seam the pressure-foot has to be loosened and tightened to meet the exigencies of the different parts of the seam. To sew a proper seam with fulness here and tightness there, the thumbscrew of the pressure-foot has to be utilised. The screw at the side of the machine is to regulate the stitch. The thumbscrew at the top of the pressure-foot ; the tension screw and the shuttle screw, all these adjuncts to the sewing machine are not fixtures, or ornaments to look at, but were placed there for use, and failure to use them properly is the main cause of indifferent sewing.

Before explaining how this sideseam should be sewn, a preliminary word or two on marking the inlay may not be out of place. It is customary for the machinist to sew the seam exactly in the basting-threads. In order to do this, the edge of the back has to overlap the basting, so that the sewing shall be in the right place, which means that every few inches the machinist has to lift up the back to see whether the needle or the sewing is in line with the marking stitches. Under these circumstances it is impossible to obtain accuracy, or even regular sewing, therefore some means should be devised to obviate this, and at the same time ensure the sewing of the seam being in the marking-stitches of the inlay.

It is suggested, therefore, that the marking-stitches should be about $\frac{1}{4}$-in. beyond the chalk-mark. This would mean that the machinist would place the edge of the back in a line with the marking stitches, which then could be seen all the way down the forepart, and without lifting up the back each time, and at the same time would ensure that the sewing would be in the original chalk-mark of the cutter.

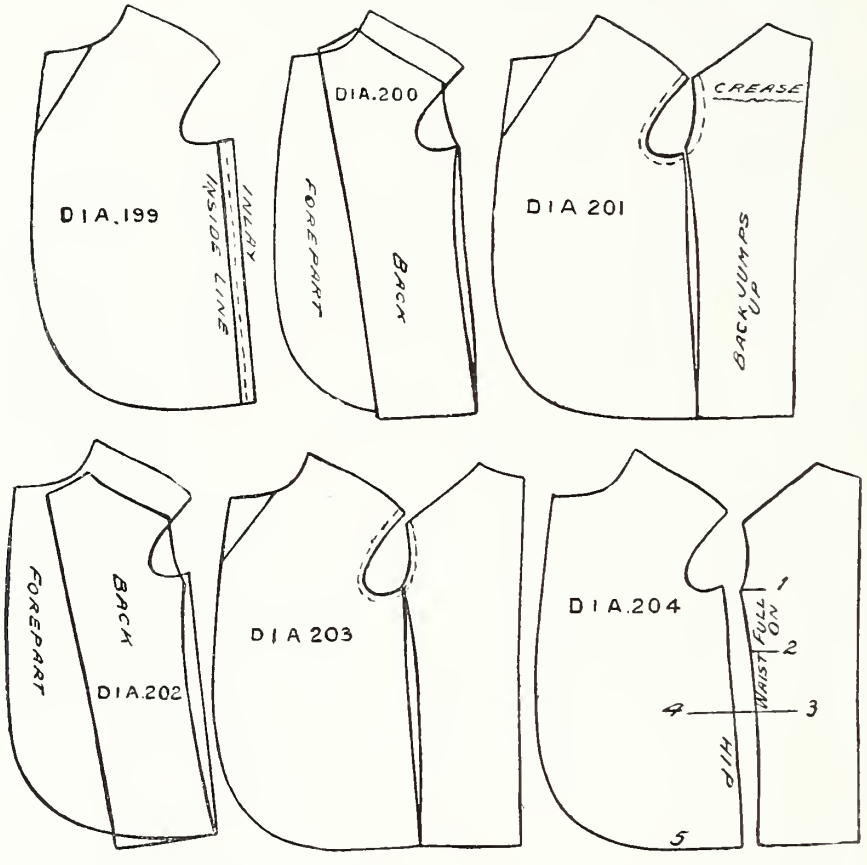
It is no trouble for the fitter-up to place his marking stitches beyond the chalk-mark, any more than on it, whilst it leaves the machinist free to vary the sewing of the seam as required.

A glance at Diagram 199 supplies the explanation. The two thick lines are the inlay, and the inside line is the line upon which the sewing should be. The dotted line, on the same diagram, is the marking-stitches, which it is suggested should be made, so that the machinist can place the edge of the back level with the dotted lines and obtain a satisfactory result.

All this, of course, is apart from the actual pitching of the back to obtain a proper fitting garment, which may be considered for a minute or two.

It is a very common mistake amongst machinists to pitch the back wrongly, with corresponding bad results.

On Diagram 200 it will be observed that the back is pitched level with the point of the forepart. In doing this it is expected that, as the two seams are straight, when the back is turned over, or the seam pressed open, it will still remain level ; but it is not so. Neither the point of the back nor the point of the forepart are level. Both are part of the circumference of the seye ; but, having been cut in sections, to be sewn together again (and a seam taken away in the process), it is obvious, in order to secure an even run of the seye circumference, that a seam most be allowed on.



The ultimate result of the two points of the back and forepart being pitched together as on Diagram 200, is shown on Diagram 201. It will be noticed on Diagram 201 that the back, after being pressed open, is raised beyond the point of the forepart. This means when the sleeves are sewn in a wider seam has to be taken off the back than the forepart.

The dotted lines round the scye represent the seam for the sewing in of the sleeves. It will be observed there is a wider seam at the back than in the forepart. If this method of closing the sideseam is adhered to the garment will exhibit a crease across the back when on the wearer, owing to an extra and faulty seam being taken away. This must be avoided, and it can be. Instead of pitching the back level with the forepart, a point of the latter, the width of the seam must be left out, as shown on Diagram 200. When this is pressed open the scye will be level all round, as shown by the dotted lines on Diagram 203. The two points meet level when the seam is opened, as, of course, they should do.

The next important point is that of closing the sideseam after it has been properly pitched. It is a common practice to run the seam down without taking into account the anatomy of the body. In order to provide for the prominences of the shoulder-blades and hips, care must be taken in closing the sideseam. The following is the procedure :

When the back has been properly pitched, as shown on Diagram 202, the back is slightly fulled, as from 1 to 2 on Diagram 204, 3-ins. in length. In doing this the pressure-foot should be loosed two turns.

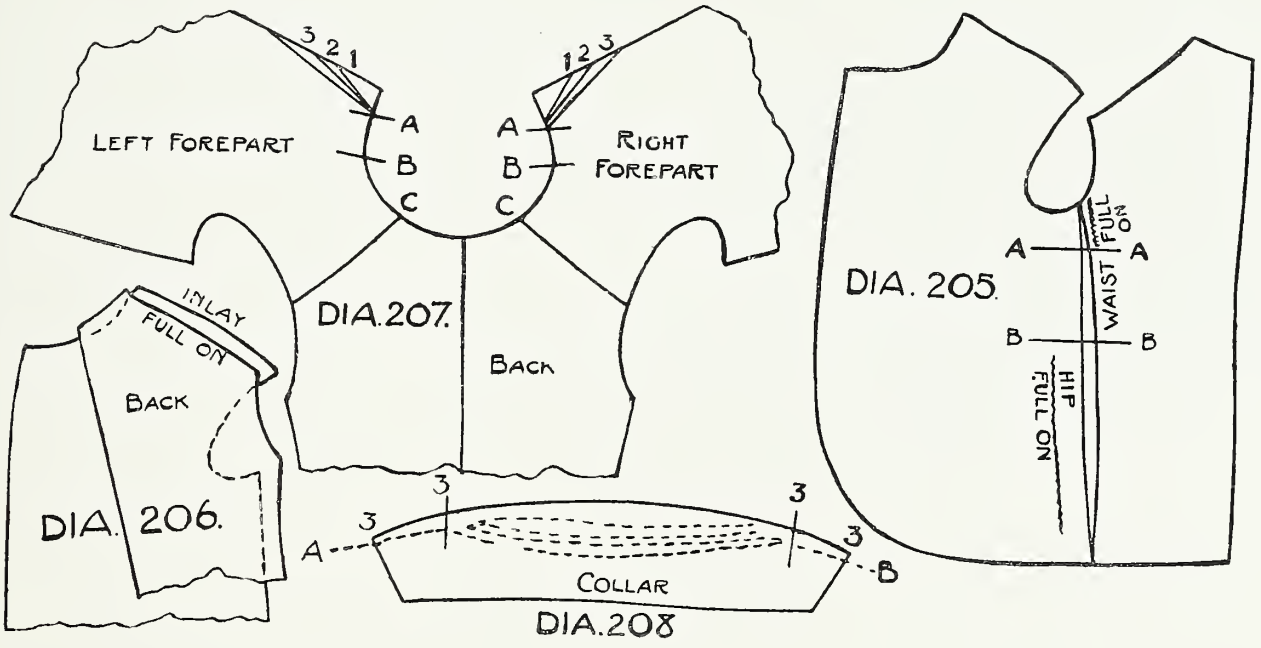
When point 2 is reached the machine is stopped, the pressure tightened as before, and the waist sewn as far as the hip, as from point 2 to 3.

At point 3 a halt is made, the pressure-foot loosed again, and the forepart fulled lightly on from point 4 to 5, and the pressure-foot tightened again.

The fulling on of the back and forepart where the blades are prominent affords relief at those parts.

The reason why the pressure-foot has to be loosed when fulness is required is in order to give a free passage between the foot and the wheel, and thus prevent the seam from stretching, which it otherwise would do, as there is a greater quantity of material under the foot when there is fulness, and allowance must be made to meet this contingency.

It may be argued that it is too much trouble to loosen and tighten the pressure foot each time when fulness is required, but it takes the merest fraction of time to perform this operation, and it soon becomes quite automatic.



SEWING THE SHOULDERS.

In the last chapter it was shown how to close a Lounge by the machine without basting, and the importance of fulling on the back and the forepart at their proper places was emphasised.

The sewing of the left forepart was explained first, but as there are two foreparts it was pointed out the fulness allowed both on the back and forepart should be equally distributed in the same place on one forepart as on the other. But how to ensure this ?

The left forepart is sewn from the armhole to the bottom. The same course cannot be followed with the right forepart owing to the inlay, therefore in this case the opposite way must be followed, i.e., from the bottom upwards.

In order to obtain the exact points for the proper distribution of the fulness on the back and forepart, the following is the procedure :

After closing the left forepart, and without opening the back, make a chalk-mark across back and inlay of the forepart 3-ins. down from the armhole, as shown on Diagram 205, on line marked A A. Make a similar chalk-mark at the waist, as indicated on line B B, same diagram.

Now place the right on the left and stamp the chalk-marks ; then do the same with the back.

A commencement can be made to sew the right forepart from the bottom, distributing the fulness on the hip, noticing that the chalk-marks on back and foreparts agree.

From these (which would be line B B on the diagram) marks at waist until line A A is reached, the sewing is level ; but from A A the back is slightly fulled until the point of scye is reached. A small point should be left out on the forepart on the right side, the same as when commencing to sew the left forepart.

By placing the two halves of the garment together the chalk-marks are thus the same on each half, but if this is left to mere guesswork the distribution of the fulness may not be properly done, and a twisted back may result, such as is often met with in tight-fitting ladies' jackets.

The reason why the left forepart is closed first instead of the right may require a little explanation. In the cheap class trade, where block patterns are resorted to, and where deviations from the abnormal are made, some cutters in the hurry and rush are apt to cut the back from ¼-in. to ½-in. lower than the forepart. This occurs more after than might be commonly supposed.

To avoid any risks of lifting up the back, and possibly resulting in an alteration afterwards, the ordinary rules of tailoring are followed, and the back sewn to the forepart, as it should be. The sewing is therefore commenced from the safest point first, fulling on the back and the forepart in their proper places; and if the back chances to be longer it is left out at the bottom, and a beginning made to sew the right forepart, leaving a similar piece of the back out. Cutters—at least, some of them—are more indebted to practical machinists than they imagine, and they frequently have their mistakes and errors of commission and omission, rectified by the machinist.

Dealing with the subject of closing the shoulders, there are at least two things that must not be overlooked. First, the shoulder-seam is cut on the bias: and secondly, manipulation with the iron plays a very important part in getting a proper fit. Apart from this, when the garment is in wear a heavy strain is placed on the shoulders during certain movements of the arms, hence the same kind of stitch and tension adopted for plain and ordinary sewing of a seam will not be suitable for shoulder sewing. As the shoulder-seam is on the bias, a certain amount of elasticity must be allowed in sewing by the machine, that is to say, a loose stitch, yet a tight one, must be used at the same time. This may appear paradoxical, nevertheless it is quite true, and the sewing machine is capable of providing the sewing stitch required to secure the strain imposed upon it, and at the same time yield the requisite elasticity. Opponents and critics of the sewing machine will not admit this.

The instructions as to the mechanism of the machine, and the altering of the tensions, which were given at the beginning of the book, will be found of service in connection with the closing of the shoulders.

In order to close the shoulders properly, and allow for elasticity, and treatment under the iron, and strain upon the wearer, the top and bottom tensions have to be changed. also the pressure-foot.

After closing the sideseam the top tension is loosed, then the shuttle tension one turn, equal to that of the top. Next the stitch is made smaller, after which the pressure-foot is loosed one turn to the left.

Thus one part of the machine gives a loose stitch to admit of elasticity, another part gives a smaller stitch to make the looseness invisible, and yet tightening the seam, whilst the loosing of the pressure-foot allows the back to be fulled on without stretching the seam. These three changes or variations, which take a mere fraction of time, all assist in the proper sewing of the shoulder-seam, which will stand all the strain that may be put upon it.

The tension and stitch properly regulated, the closing of the shoulder is proceeded with. A commencement is made again with the left shoulder by placing the back shoulder-point to the forepart, where the inlay is marked, as shown on Diagram 206.

No point of the forepart is left out at the neck, but a point is left out at the armhole, similar to that of the sideseam. In sewing the shoulder it must be fulled on gradually from point to point, so as to give ease over the shoulder blade.

SEWING THE COLLAR.

Next is the sewing in of the collar by the machine without basting. It has been said that this cannot be done properly, but why not? Where the same principle adopted by hand is followed in sewing by the machine, the result is perfectly satisfactory.

The first process is to stitch out the stand of the collar, which is as follows:

Place the collar on canvas and stitch a line from A to B, on the round side, ½-in. from the edge, as shown on Diagram 208.

Mark off from the centre of the collar ¾-in. or 1-in., as would be required. Then mark with chalk the length of turn, about 2 ins. as marked from point 3 to 3 at each end, and fill in the space with a couple of rows of stitching. The remainder is padded by hand.

Change the tension from the shoulder sewing to the ordinary. Hand the collar to the presser, who will press in the stand.

When returned, cut away the canvas of the collar the width of the seam.

Now place the garment as closed with the neck towards the needle. In this case begin to sew the right half of the collar first, and not the left.

Place the centre of the collar to the centre of the back; keep the collar, a little tight from that point to the shoulder-point. C. From C to B smooth. From B to A full on the collar, and from where the forepart has been notched by the fitter, where the collar-seam should end it should be smooth. That is for an ordinary shape. But if the opening has to be longer, as marked 1, 2 and 3, on Diagram 207, a shorter collar is required to give it a spring, and this is done by keeping the collar a little tight from point A. Then sew the collar in the left side the same as the right side was sewn.

MAKING THE BACK VENT.

As a sort of preparation or introduction to the making of Morning and Frock Coats, in stitched, bound and cord, by the machine and without any basting, the present chapter deals with the making of the "hook" back vent in a lounge or overcoat back.

In the high-class and medium-class trades the staytape is put in the back by hand, but the object of this article is to show how to put the staytape on by machine, which answers the same purpose; in fact, it is more pliable than when put on by hand, especially in heavy overcoating.

In putting on staytape in heavy melton or other thick material by the machine instead of by hand, the advantage is a better stay or firmness, which hand-stitching does not give, whilst in a thinner material staytape put on by the machine conduces to better form in the slit. Thus, in all respects staytape put in by machine possesses advantages over hand-work, economy aside.

The kicking away of the back from the original plumb-line—always an eyesore—is a defect which will also come under consideration, and the remedy explained.

This kicking away of the top slit may be due to several causes. It may arise from the bad tacking of the "hook," or the improper making up of the slit by bad staying, or insufficient spring at the side-seam of the hips. The main cause, however, is due probably to the bad tacking of the step. If the step was tacked properly, although the back slit was not correctly worked up, the under slit would not show itself. Again, if there should be insufficient spring allowed on forepart of hip, and the step properly tacked, there would be a crease across the lower part of the back hip; but the under slit would not be observed in coming out.

The machinist must therefore learn to make an accurate step-vent in a lounge or overcoat, as the stepping-stone towards the Morning and Frock Coat back.

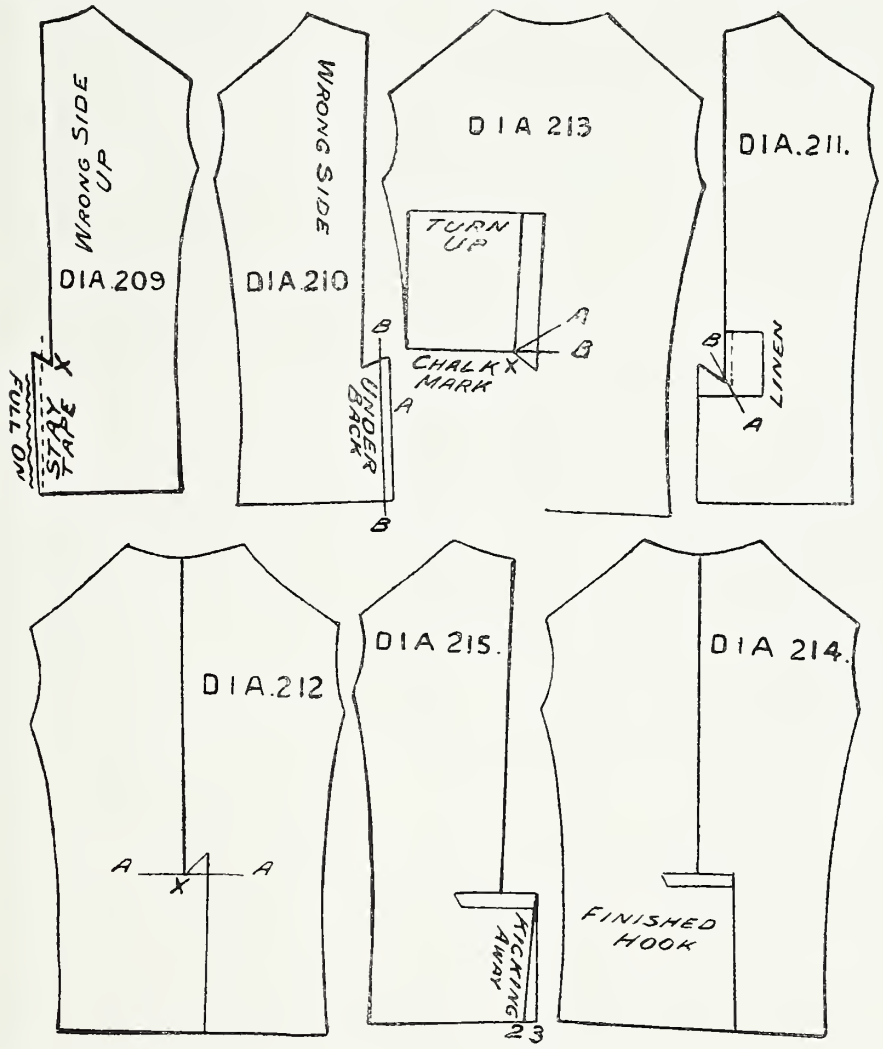
With the aid of the accompanying diagrams the reader should experience little difficulty in following the subject.

Commencing, then, at the first stage, when a step-vent has to be made the back is cut in two halves. The procedure is to take the left half of the back and place

it wrong side up, with the neck towards the machinist, as shown on Diagram 209.

Measure off from the corner of the back-seam, marked X, the width of the step required, and make a chalk-mark. Place the ruler on the slit and chalk all the way down a line, but instead of the ruler being held straight, let it incline towards the bottom end of the vent, about one-sixteenth of an inch.

A glance at the dotted lines of Diagram 209 will show that it is narrower at the bottom than it is at the top. The reason



of this will be explained later. Upon the chalk line mentioned, and beginning from the bottom of the back, sew on the staytape a small stitch, and gradually pull on the slit, and keep the staytape a bit tight, holding it with the left hand, whilst the fulling on of the slit is done with the right hand. The object of keeping the staytape tight is, in the first place, to prevent the slit, which is on the bias, from being stretched during the process of stitching, either single or double ; but when made up it brings it back to the plumb line as if it has been marked straight in the first instance. If it had been marked straight, and the staytape drawn in, the top slit would have been round instead of straight, therefore the allowance is made.

Turn the back over on the right side, so that the shuttle-stitching of the staytape will be the right side of the back. This stitching will now be the guide. Turn this in a sixteenth of an inch and stitch the back slit, either single, swelled or double as required. The staytape is secured in such a manner that either the first or second row of stitching must catch with the staytape, which is not always secured by hand.

The under slit next demands attention. This does not require staytape, as the back lining is felled on to the edge as near as possible. As a rule the back slit is stitched down to give firmness.

Arrange the right half back with the slit towards the left hand, as shown on Diagram 210 ; turn in the edge of the slit to line B and B, on the diagram, and stitch it a narrow swell, according to the foot.

The drawing in of the staytape on the left back does not need pressing out, as the working up of the slit, by stitching it according to the foot and guide, smooths out the fulness during the process, so the presser's time is therefore saved.

The sewing together of the back-seam is an important detail, the correctness of which depends upon the proper making of the step or "hook." To proceed, place the two halves of the back together so that the two corners shall meet at the point X (as on Diagram 209), the left back to lie on top. Take a piece of linen and cut it to shape so that part of it shall be on the slit, and part to be sewn with the seam. A glance at Diagram 211 will show the thick lines in position, with the word "linen" adjacent.

In order to sew the seam so as to have a grip for the sewing under of the step, the sewing of the seam must be commenced a sixteenth of an inch below the point, as shown by the dotted lines on Diagram 211. Then sew the seam up to the neck and fasten off.

Next notch the seam from X to where the sewing was commenced, in an oblique direction, as indicated by lines A and B on Diagram 211.

Open out the back as shown on Diagram 212, and make a chalk-mark at point X on the same diagram partly on the left and partly on the right back, as shown by the line A A on the diagram. This serves as a guide for sewing under the step.

Turn the back round so that the bottom is towards the wheel. Whilst in that position lift up over the left part of the back, as shown on Diagram 213, and place the chalk-mark of the left back level with the chalk-mark on the right half, as shown by line marked B ; but instead of sewing under the step on line B to X, Diagram 213, sew it under a sixteenth of an inch above line B, as from line A to X on Diagram 213.

Cut away the surplus, but not too closely to fray out, and turn the left back down, and tack the back according to Diagram 214, which will then be finished.

Although the back has been sewn under, slanting from A to X instead of B to X, it will be observed that when the back is tacked it will appear straight according to the eye. The reason why it is sewn under slanting to appear straight is because the back has to be prevented from kicking away whilst on the wearer, and in order to do that the back has to be lifted up a little without apparently seeing its effect in doing so, and by slightly raising it whilst being sewn under, the purpose is accomplished.

To the uninitiated it seems peculiar to sew a crooked seam to be straight, but it

is no more singular than sewing a straight seam in a round armhole.

Diagram 215 shows how the back kicks away on line 2, instead of being straight, as on line 3. The open back space between lines 2 and 3 spoils the whole appearance of the step and vent. The unsightly defect may be avoided by sewing under the step, as suggested on Diagram 213.

THE STRAIGHT SLIT OR VENT.

In the last chapter instructions were given how to make a hook with staytape at slit, for an overcoat, without any basting, and the question naturally arises as to whether the same principle of making the back can be applied to a straight slit, without a hook, as illustrated on Diagram 216.

The answer is that, whilst the staytape is stitched on the left half-back, the same way as for a hook, a variation has to be made.

In the hook-back, as it is generally termed, the staytape is put on first, and then the back-seam is sewn together; but in the straight slit back the seam is first sewn up, and then the staytape is put on. This is done in order to ensure accuracy. The procedure is as follows:

First sew up the back-seam as indicated by the dotted lines on Diagram 217, going $\frac{1}{8}$-in. below the hook. Then make a notch from the corner of the hook to the seam, slanting as shown by the line marked X on Diagram 217.

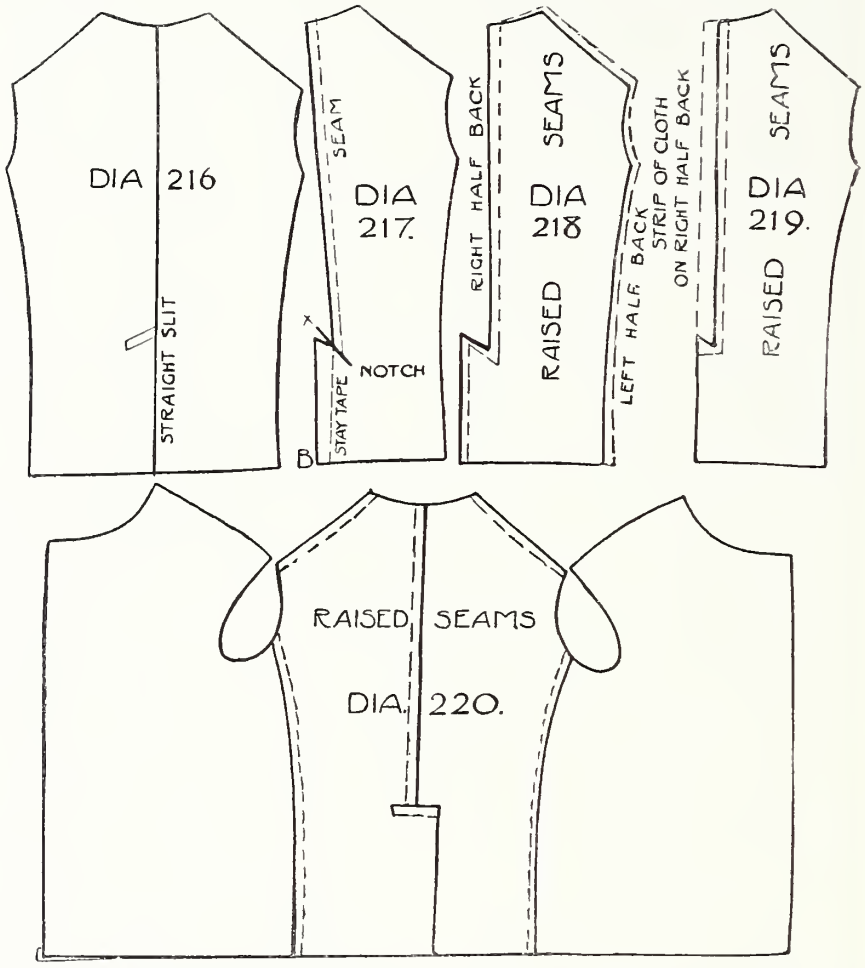
In sewing the back a piece of linen must be sewn in for the tacking, as described in the last chapter. Make a mark midway between the seam of the back and the corner of the hook right down to the bottom, on the wrong side of the left half of the back.

The dotted lines on the slit, Diagram 217, will explain.

In drawing the chalk-line, let the line incline about $\frac{1}{8}$-in. to the back, marked B on the diagram. This margin is allowed for drawing in the staytape. After this, open the back and stitch the staytape on this chalk-mark, drawing in gradually from point B up to the notch. Open the back, with right side up, and turn in the slit level with the seam, and hollow the stitching on of the stay-tape as a guide. The simplest way to stitch the slit is to place the needle in the back, where it is intended to commence to stitch the slit, and fix on the guide to the bed of the machine close up to the edge of the slit. The use of this guide, and the method of fixing it for stitching, is explained in the earlier chapters of the book in connection with Diagram 12.

The guide fixed, turn in the bottom part of the slit; hold it in the left hand, and then double the slit half-way, and stitch from the corner where the needle was placed half-way down the slit, and then the remaining half. The guide on the machine will obviate any crooked stitching.

If the slit is to be single-stitched, then remove the guide and tack the back as shown on Diagram 216. If it is to be double-stitched, then shift the guide towards the right hand the width of stitching required, and re-fix the screw; or, if you prefer it, remove the guide and stitch the second row according to the foot by turning the back round, with the edge of the slit for a guide for straightness. Then tack the back.



In all cases where edges are to be stitched the guide should be used.

The sewing up of the back for raised or overlapping seams next comes under consideration.

It should be noted, first of all, that the left half of the back must be overlapped on to the right, and whether the overlapping has to be stitched narrow or wide, an allowance has to be made on the right half of the back to receive the stitching of the overlapping.

Some cutters omit to allow for this overlapping, cutting the garment to the exact measure. The result is, the machinist, in order to have something to overlap on, shifts the back to provide the overlapping.

On Diagram 218 the thick lines represent the right half of the back and the dotted lines the left half.

It will be observed that in consequence of the left-half of the back being shifted as stated, when the back is finished the left-half back is about $\frac{1}{2}$-in. wider than the right-half back. Not only this, through the cutter's negligence or oversight the effect on the shoulder and neck is also most marked, as is indicated by the dotted lines on Diagram 218.

When the mistake has been made the remedy is to take a long strip of cloth of any kind, or smaller strips pieced together the required length, and place it under the right-half back, and stitch it down raw edge, as shown on Diagram 219. Then place the two halves of the back level and sew an ordinary seam. This avoids one half of the back being wider than the other, and secures the necessary allowance for overlapping.

The strip of cloth should not, of course,

be on the bias, or contraction or stretching may ensue.

When this is done, proceed to make the back, either with a hook, or for a straight slit, as required. If it is a straight slit, the stitching of the slit has to be the same width as the overlapping, in which case the overlapping or raising has to be done first, and then stitch the slit, after which the tacking is made.

A word about the tension of the stitch when seaming up the back, or closing the back to the forepart for raised seams.

This variation of the stitch gives more freedom for making the overlapping more evenly, with the actual line of where the seam was sewn up. In doing so, neither the machinist nor the presser will run any risk in the cracking of the stitches, during the process of over-lapping or under-pressing, with pressure on heavy material.

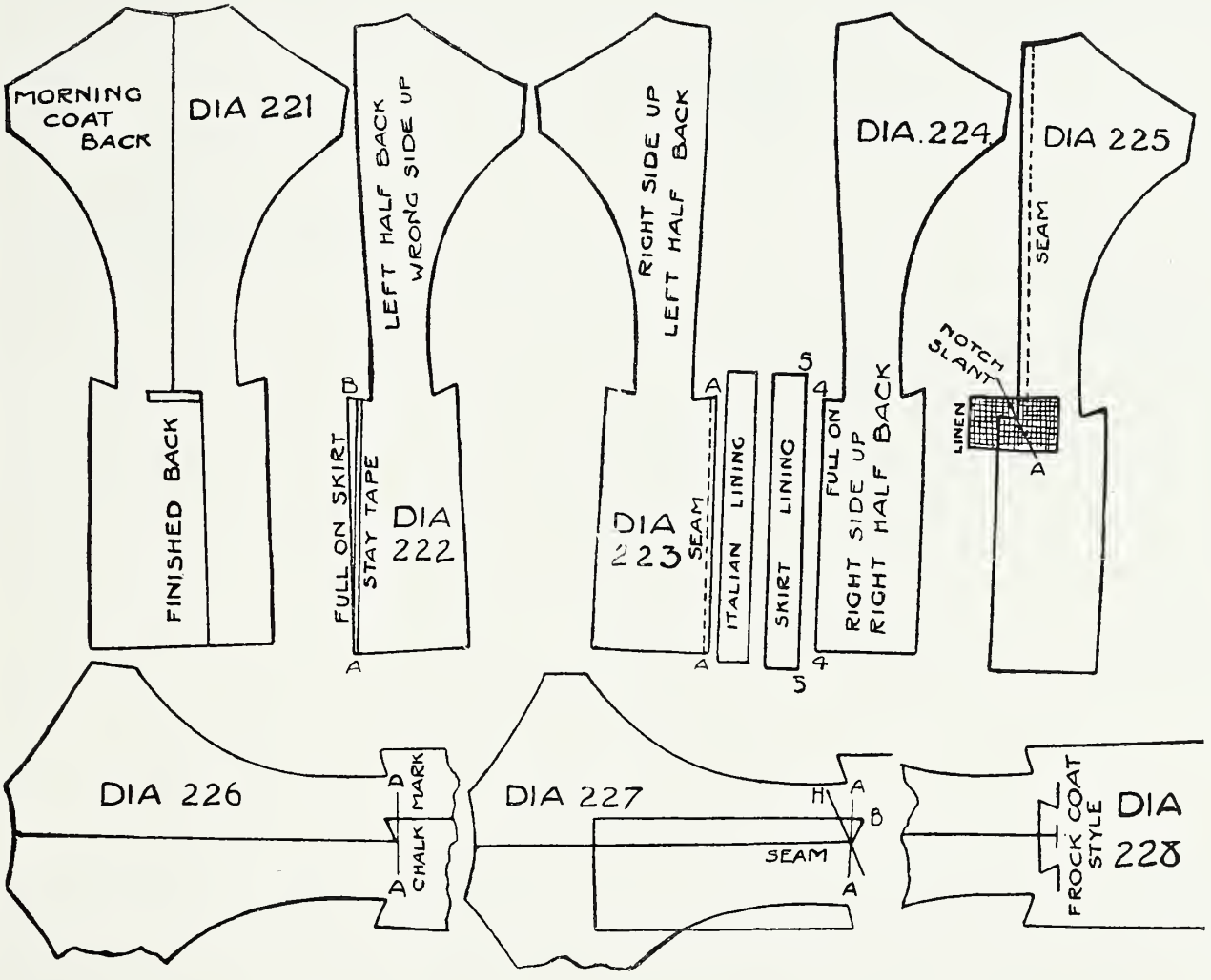
With regard to the sideseam and shoulders, the overlapping has to be done on the back, as shown on Diagram 220.

BODY-COAT BACKS.

The next step forward in garment-making by the sewing machine is the making of a stitched Morning Coat and Frock Coat without any basting.

Diagram 221 outlines a finished Morning Coat back made by this method, and the procedure is as follows :

Take the left half back, with the wrong side up, and make a chalk-mark on line A and B, Diagram 222, the width of the hook required, inclining the ruler slightly



As the back has to be turned over for the overlapping, we must allow for a certain softness in the sewing, and a little elasticity for the bending over of the seam. This is done by making the top tension looser, by one turn only to the left, and a smaller stitch. In fact, a similar kind of stitch is required for sewing up of an ordinary shoulder-seam, as described in connection with Diagram 208.

As a rule, an inlay is allowed on the side-seam and shoulders, and this is utilised for the overlapping. But assuming that an inlay has to be let out, and nothing is left of the inlay for overlapping, we must then adopt the same method for putting on strips of material as described for the back, Diagram 219.

towards the edge. Place this left half of the back in the position as shown on the diagram with the neck towards the machinist, and the centre-seam towards the right hand. On this chalk-mark stitch on the staytape, in the same way as for an overcoat, as previously described, keeping the staytape a bit tight.

Now turn the same half back over on the right side, as shown on Diagram 223, and

sew on the back skirt lining, on the line of the back marked A to B, a narrow seam.

In sewing the lining disperse the fulness of the back skirt gradually—the effect of stitching on the back skirt. It is now ready for stitching, either single or double, as required. To do this, place the guide on the bed of the machine, and fix it according to the width of stitching decided upon.

Turn the back in so that the stitches where the staytape was put on are on the wrong side of the back; then stitch down the back with silk, with a small stitch. Put that aside until the right half of the back is prepared. This does not need any staytape.

Arrange the back right side up, with the neck towards the machinist, and sew the other half of the skirt lining on line 5, 5, to line 4, 4, on Diagram 224, and slightly full on the back skirt.

Next turn the back over on the wrong side, with the centre seam towards the right hand. Turn the skirt lining over towards the left hand, so that about $\frac{1}{4}$-in. of the back is shown on the wrong side, and stitch the lining down on the edge of the lining.

The back-seam is now sewn up. Place the two halves of the back together, and keep away the two back skirt linings.

Arrange a short strip of linen underneath the right half back, and also a similar piece on the top of the left half, as indicated on Diagram 225.

Commence to sew the centre of the back a little below the corner of the hook, as shown by the dotted lines on Diagram 225. Then make an oblique notch from the corner of the hook up to the sewing, as marked on line A of the same diagram. Likewise notch the italian lining from the top as far as the hook at the centre of the seam, and bring the left half back of skirt over to the right, as illustrated on Diagram 226.

The hook is now in its rough state ready for sewing under. Before doing this, however, see that the back is straight, and that the width of the under back at the bottom is the same as the top. A glance at Diagram 226 explains this.

As a guide for sewing under, place the ruler level at the corner of the back, marked X, and draw a line as from A to A, half on the left back and half on the right. Then place the back under the foot, with the bottom of the back towards the wheel, and lift up the left half of the back skirt as shown on Diagram 227.

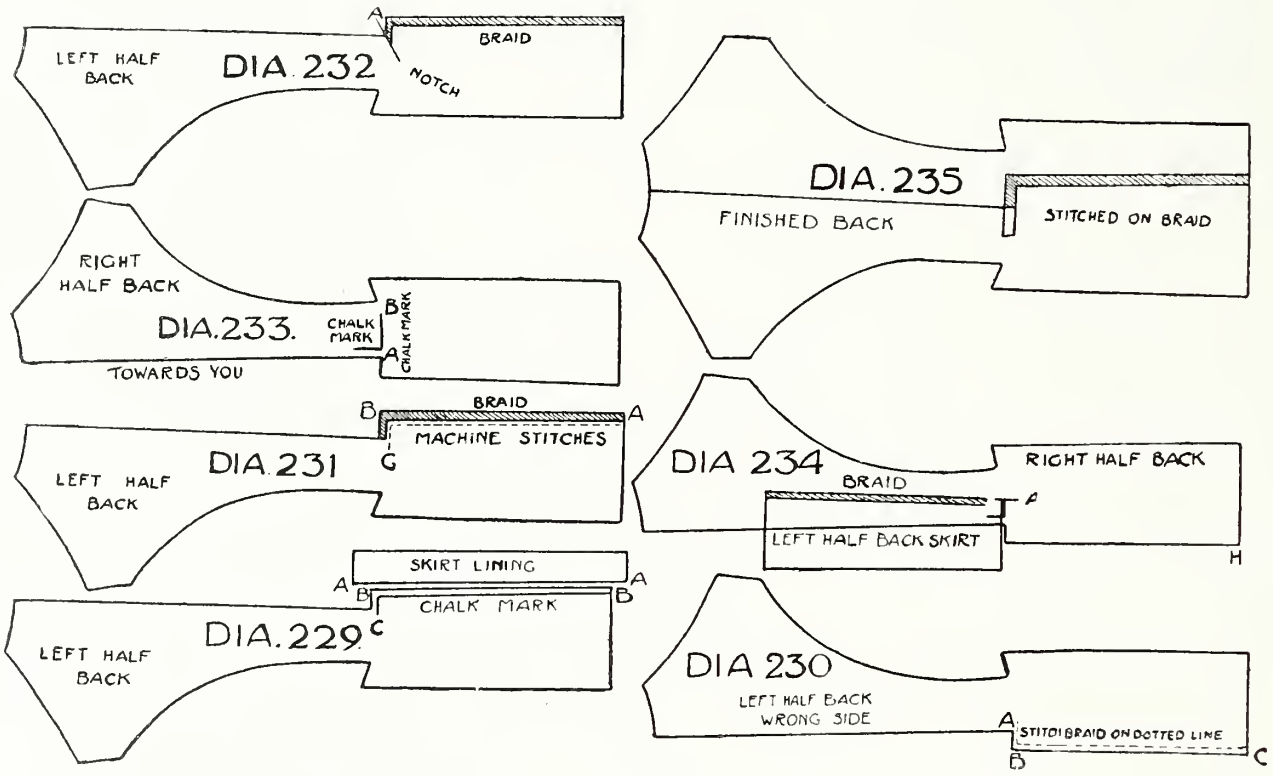
Place the chalk-mark of the left half back level with that of the right half, as shown on line A A, on Diagram 227, and sew under the hook a level line from point B to the seam. Whilst in that position cut away the surplus at point B and bring down the half skirt back.

Now tack the back to complete it, the finished back for the Morning Coat corresponding with that outlined on Diagram 221.

A Frock Coat back is made in exactly the same way as the Morning Coat, but the tacking may be varied as shown on Diagram 228.

To prevent the back kicking away, the left half back skirt of Diagram 227 has to be shifted a little towards the left, so that line A is moved to point H, and then a straight line is sewn from point B to the seam, as though the back had not been slightly moved. There is no danger that in so doing the hook of the back will be crooked. This slight shifting is scarcely noticeable, but has a decided bearing upon the straightness of the back after tacking.

When doing any coloured work the shuttle silk should be the same as for top stitching, and the stitching on of the staytape.



BRAIDED BACKS.

The making of a body coat back with stitched-on braid—which is distinct from flat braid—is the subject of the present chapter.

In some cases the braid is stitched on the right side and felled over on the wrong side, and the hook is then completed; but the one described is the making of the back where the necessity for felling is obviated, and the work of felling on the wrong side is done by the machine. Moreover, no staytape is required in the making of this back.

The greatest attention must be paid to the sewing under of the hook, as will be described in dealing with Diagram 234, as upon the accuracy of this part depends the balance of the two halves of the back when being sewn together in the centre, after the hook has been sewn under.

The term " balance of the centre-seam " is used in the sense that if the sewing under of the hook is shifted from where the original chalk marks were made it would mean that when the top of the neck is reached the two seams would not meet when sewing up the centre.

In making a stitched back, as just previously described, the centre seam is sewn up first, and then the hook is sewn under; but in the case of braided work the reverse is the case. The hook is first sewn under, and then the centre-seam sewn up; therefore unless at this part of sewing under the hook care is taken, the hook must be undone and the re-sewing done again.

The making of the right half of the skirt and stitching over is the same in this case as in the stitched back, illustrated in the last chapter. This half should be made before commencing on the left half.

Proceeding, then, with the left half back, first make a chalk-mark as shown on Diagram 229, the width of the hook. The mark, C, is half the width of the braid from the corner of the back between C and B. Sew on the skirt lining, A A, to B B, keeping the lining a little tight.

In no case should the skirt lining be cut on the bias, but if no other way is possible, the skirt lining itself must be slightly fulled on instead of the material. Now turn the back in, the same as the stitched back, as far as the chalk-mark, and, making that the edge, stitch down, commencing from C, being the chalk-mark, and the edge of the skirt with a single stitch. This keeps the back in position for the braid.

In sewing on the back skirt lining place a piece of linen under the back at the corner where the hook is to be, and sew the linen with it, and the skirt lining is stitched over. Cut the linen to the shape of the back-seam and the hook, also the back skirt lining at that part.

This done, turn it over on the wrong side, as shown on Diagram 230, the dotted lines thereon representing the stitches previously made. These stitches are the guide for the stitching on of the braid on the wrong side.

Next arrange the half back with the centre-seam side towards you. Take the braid in the left hand, and leaving out a piece of it beyond A, commence to stitch on the braid on the dotted line from A to B. Stop the machine; lift up the foot and needle, and form a small pleat of the braid at point B, and stitch down the braid on the back skirt from B to C. Cut the braid off; keep it a little tight on the back skirt, which will be smoothed out by the iron. Turn the back over on the right side, as outlined on Diagram 231, where half the braid is stitched on the wrong side and the other half loose, ready for stitching over on the right side.

Turn the back round so that the neck is towards the machinist, and commencing from A, stitch the braid over on the right side, which will cover the machine stitch as far as B; then stop, and lift up the foot and needle and form the pleat, and stitch braid down to C.

DIAGRAM 232.

This brings us to Diagram 232.

Now make a notch, obliquely, as shown on line A, Diagram 232, from the corner, at the end of the back, by line A, the width of a seam, and as far as the stitching of the braid.

Next take up the right half back, Diagram 233, and mark off with a chalk a width of a seam from the centre of the back, and also the length of the hook of Diagram 232, including a seam, and measure off the same length on Diagram 233, as shown by line A to B on the diagram. Correctness in making these chalk-marks is very important.

Now place the right half back with the centre seam towards you, as shown on Diagram 233. Take the left half back, Diagram 232; double it on the wrong side with the hook at the centre. Whilst holding it in that position place the edge of the braid of the hook on to the chalk-marks previously made, as shown on Diagram 234. Place point A, of Diagram 232, at the point A, on Diagram 234, this being the length of the hook previously marked on Diagram 233, and stitch braid right on edge, very fine, from point A, Diagram 234, to where previously notched on Diagram 232. Now bring the left half skirt over towards H. It is now ready for sewing up the centre seam.

Turn the back round so that the neck is towards you; place the left half back over on the right half, and sew up the centre-seam, commencing from where it was notched.

In commencing to sew the seam see that the piece of braid previously left out beyond A, on Diagram 230, is on the wrong side. Open the back and tack it as shown on Diagram 235, which is the finished back.

It is very essential that, when stitching the braid either on the right or wrong side, a small stitch should be used, and that the top tension be made a little tighter, by one turn, so as to sink the stitch.

In cases where instructions are given for the braid to be felled on the wrong side, instead of being stitched on by the machine, the back is made up as Diagram 230.

Instead of stitching the braid in the stitches of the wrong side of Diagram 230, stitch the braid on the right side of the back, commencing from point C, instead of from point A. On reaching point B on the right side, make a small pleat and then go on to A.

Although these instructions may appear somewhat complicated, after a little practice the back will be as easy to make as sewing up a plain seam.

MAKING A CORDED-EDGE BACK.

It may be somewhat of a surprise to some of the old school of tailors to learn that a corded-edge back may be made without the aid of any hand sewing; but such is nevertheless a fact, as will be seen by reference to Diagram 240. Where, however, it is insisted that the cord be put on by hand, even then a good deal of time and hand labour may be saved by first making the back complete as for a stitched back, as explained in connection with Diagrams 221 to 228. Afterwards the sewing on of the cord is plain sailing.

The tailor who has seen a corded-edge back properly made by the machine, with the machine sewing invisible, will no longer doubt the possibility of its successful accomplishment. The actual sewing on of the cord is not the most important part of the back: it is the details of how and where to place the cord, and the correct position it should be in for sewing that is all important.

In one of the earlier chapters a description of a special foot to be attached to the machine for corded work was given, with a drawing of same. This foot has a groove cut out underneath, and without it the attempt to sew the cord on would be useless. It is this groove in the foot which permits the cord being sewn on by the machine; it enables the pressure-foot to rest on the back, whilst the cord is passing through on being stitched on to the back.

With this brief introduction we may proceed.

First of all the right half is made similar to the stitched back, as described in connection with Diagram 224 of a previous chapter. Now take the left half back, as

shown on Diagram 236, and make a chalk-mark the width of the hook required, and another as from B to B on Diagram 236, and still another short one, one-sixteenth of an inch under the corner of the back, as from F to C. Upon this line F C measure off a sixteenth of an inch from the centre of the seam back at the corner point, and make another chalk-mark, as at point E.

After making these marks sew on the italian skirt lining, line O O on to line B B, and in doing so full slightly on the material, not the lining. Turn the half back round so that the neck will be towards the wheel. Take the cord in the left hand; place it on the chalk-mark at point E, on Diagram 236, and drop the foot on it, observing, of course, that the cord is in the groove of the foot.

Sew the cord on from point E to point C on the line marked A, and stop. Lift up the foot and needle, and turn the back round so that the bottom of the back will be towards the machinist. Push the cord a little forward at the point, which will make it a square corner instead of a round one when finished; drop the foot on the cord, as before, and stitch the cord on the chalk-mark from point C to the bottom. Allow the cord to go with ease, and refrain from pulling it.

Next notch the back of line A, obliquely from point B as far as the cord. This is best done with the point of the scissors. Turn the lining in so that the cord shall be the edge, as shown on Diagram 237, and stitch next to the cord, as shown by the dotted line on the same diagram.

Place the right half back on the wheel with the neckpoint towards the operator, as illustrated by Diagram 238. Upon this place the left half, and sew the usual centre commencing one-sixteenth of an inch below the corner of the hook, as shown by line A C on Diagram 238. Make a notch in a slanting direction from the corner of the hook where the sewing of the centre-seam was commenced, as indicated on line A, Diagram 238. Why the notch is made obliquely instead of quite straight is in order to give a better grip for turning in.

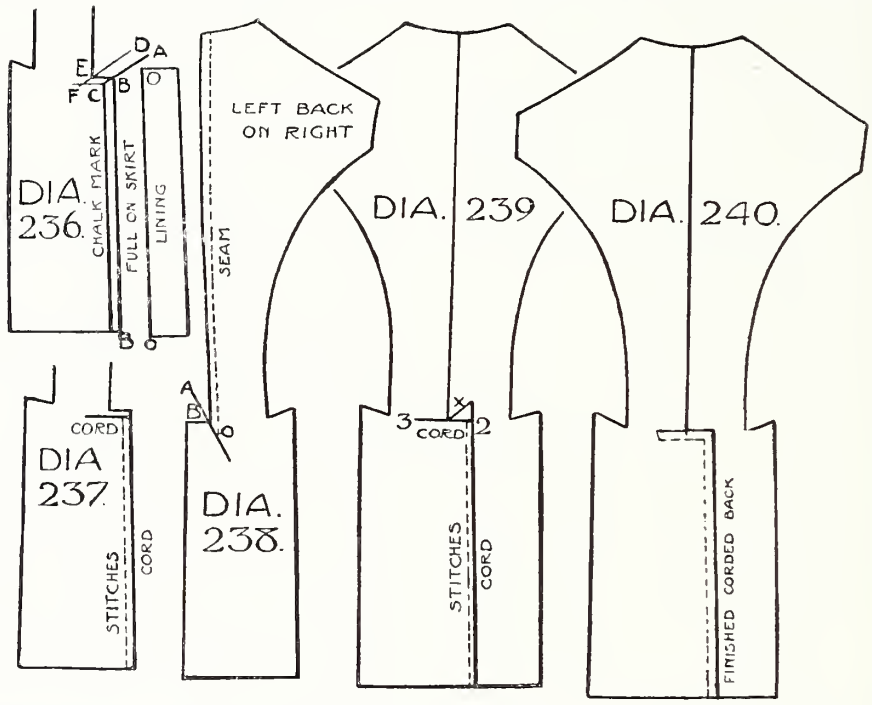
In sewing up the centre seam arrange a piece of linen half on the skirt and half on the back, on both the right and left backs, and sew it in with the seam. Open the back as shown on Diagram 240, making the lining straight, and observing that the back is the same width at the bottom as the top, as indicated on Diagram 239.

Turn the back round so that the neck will be towards the wheel.

A glance at Diagram 239 will show a space between lines 2 and 3 and X. This point is what we call the surplus, and is the result of the slanting notch. Turn this surplus under and bring the piece of extra length of cord (as shown by the centre-seam up to point 3), also under so as to be on the wrong side, and stitch in the seam of the cord from the centre of the seam to point 2. Lift up the left half-back skirt and cut away the surplus, but not too closely, or it may fray out. Bring the skirt over again and tack the back as depicted on Diagram 240, which portrays the finished back.

The dotted lines represent the machine stitches next to the cord. Where cord is put on either by hand or machine it is not necessary to put staytape on as for a stitched back, because the cord will keep the edge firm without any further stay; should, however, there be any fear, as in the case of a fine texture material, that the cord will be put on loosely, and so cause the back to gape, staytape may be put in as a safeguard. In this case the chalk-mark down the back skirt, instead of being made on the right side should be made on the wrong side. The stitches on the right side, where the staytape is sewn on, will be the guide for sewing on the cord; but instead of sewing the cord right on the stitch it must be sewn on right next to it, so that when the lining is turned in those stitches will be on the wrong side of the back.

In the case of a stitched back, slightly lift it up in sewing under the hook to prevent it kicking away. This contingency has been provided for by pushing the cord a little forward at the point marked C on Diagram 236, which serves the additional purpose of preventing the corner from being round when finished.



MAKING A FLAT-BRAIDED BACK.

The preliminary stage of making a flat-braided back by the machine differs from those of other backs. Not only has the finished back, as shown on Diagram 246, to have the same durability as when made by hand, or partly by hand, but it has also to possess the same artistic finish. That these two things can be accomplished by the machine is beyond question, if all the details are followed carefully, and care and patience are exercised.

There are a few more details to be followed in the making of a flat-braided back than in other backs, although the points should not be difficult to remember.

In addition to durability and style there must be a certain amount of thinness and softness, so that the back should not have a clumsy, heavy appearance when finished. The nature of the material with which flat-braided work is made up is usually light-weight in texture, therefore the braiding should be in harmony with this feature.

It may be argued that theory and practice in this connection may be at variance, and that, while easy to describe on paper by means of diagrams and explanatory letter-press, the working out of the instructions is not quite so simple a matter. Ocular demonstration, or the actual doing of the thing, is certainly better than any amount of verbal instructions; but the latter is the next best method, and in this particular case a satisfactory alternative. In other words, if the procedure laid down herein

is carefully followed the result will be quite satisfactory.

To commence, the right half-back skirt is made up as usual for all purposes ; it is the left-half which plays the important part.

Take, then, the left half-back and mark off from the corner-point, A, the width of the back required, which is generally about ¾-in., as shown on Diagram 241. Make a chalk-mark from C to D, as on the same diagram. Now cut the remainder of the back skirt in the chalk line. Sew on the skirt lining, a narrow seam, about one-tenth of an inch, line O O, to line C D. Turn the lining over, or form a piping of the italian on the right side of the back, and stitch in the same to keep the lining down. This produces the half-back as represented on Diagram 242.

The object of cutting a part of the back-skirt away and forming a piping on the right side is to obtain a thin edge, which gives a better appearance. If the cloth had been turned in as in other backs, it would make the braid look heavy.

In sewing on the skirt lining it should be kept rather tight, which allows for working up and obviates gaping.

Now take the braid in the left hand, and leaving out about 1½-ins. above the hook line, as shown on Diagram 243, commence to stitch the braid hard on the edge of the piping, as from A to B. Let the braid pass through the fingers easily, without pulling it or fulling on. Turn the back round so that the neck is towards the operator, and stitch the braid on the inside of the skirt up to the hook on line A.

Measure off from line A C to line D, the width of the braid, and make a chalk-mark as shown on line D, Diagram, 243.

Next measure off from the corner of the hook at point C to point E, the width of a seam, ¼-in., and make a chalk-mark on line D, as shown.

The most important point of forming the cushion, which is the basis upon which the hook is formed, has now been reached. Bring over towards line B the piece of braid marked X, above the hook line, making line A C the bend ; then sew the braid down from the point at line D A, in a slanting direction, as shown by the line H H on Diagram 244.

This done, bring the braid over to point E, and it will fall into the position as represented on Diagram 244. This is the formation of the cushion.

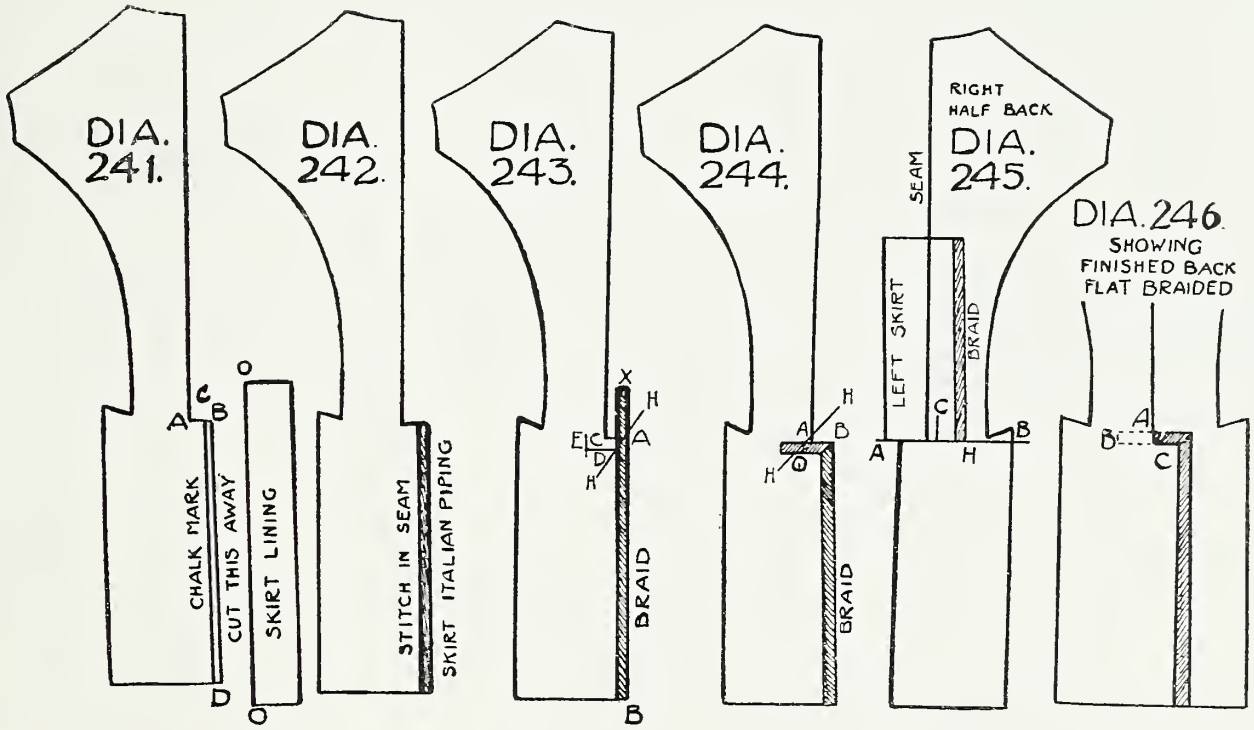
Now stitch down the inside part of braid, from the corner of the cushion to the point, to the chalk-mark previously made (marked E on Diagram 243, and point O on Diagram 244).

The space between corner A to O, on Diagram 244, represents the seam to be sewn in the centre of the back. Lift aside the braid on line A and B, Diagram 244, and notch the back slanting from the corner, A to D, as shown by the line H H on the same diagram.

Point O is the end where the piece of braid was stitched on to form the hook.

The sewing under of the hook is the next operation, and later on it will be explained why the hook is sewn under instead of stitching it down flat, the same as the edge of the back.

Take the right half-back and make a chalk-mark, right across the hook line, as shown by line A and B, on Diagram 245. On that line measure off from the centre of the back the width of the hook, which will be the width from A to B, on Diagram 244, and make a chalk-mark as indicated by the letter H, on Diagram 245. Then on the same line, A and B, measure off from the centre of the back the width of the seam, a ¼-in., and make still another chalk-mark, as shown by letter C. Double the left half-back over in halves, on the wrong side, at the hook. Place the right half-back under the needle, right side up, and the bottom towards the wheel. Whilst in that position place the hook, with the point marked B (Diagram 244). on the point H, line A B (Diagram 245). The edges of the left half-back must be level with the chalk-mark, C, on Diagram 245. Then stitch down on line A B, and from point H, the braid of the hook very fine on the edge, as far as the braid will reach.



But before stitching this piece of braid down, place a piece of linen between the skirt lining and the material, wide enough so that half should be sewn with the seam of the back, and the other half for tacking the hook. Bring the left skirt over ; place the left half-back on the right, and sew up the centre-seam of the back, commencing from the notch point O, on Diagram 244.

Then complete the back by tacking it, as represented by the small stitches on Diagram 246.

In tacking the back begin at point A, proceed to B, along to C in the braid, and then in the seam of the cushion, but not on it.

The reason for sewing the braid at the hook under instead of stitching it down flat is that, if it were done in the latter style it would look more like a patch than newly done. Whilst the invisible stitches by the sewing under correspond with the formation of the cushion, which was also sewn under, as mentioned on Diagram 243, it gives the back an entirely different appearance, and also imparts smartness to it.

BODY-COAT WAIST-SEAMS.

Objectors to the sewing machine have asserted that although many operations in garment making may be done by the machine satisfactorily, yet the sewing of the waist-seam or side-seams of a Morning or Frock Coat are not possible, or at any rate comparable to hand-sewing. The reason being that, as the seams are cut on the bias, there is a tendency to stretching when the sewing is done by the machine.

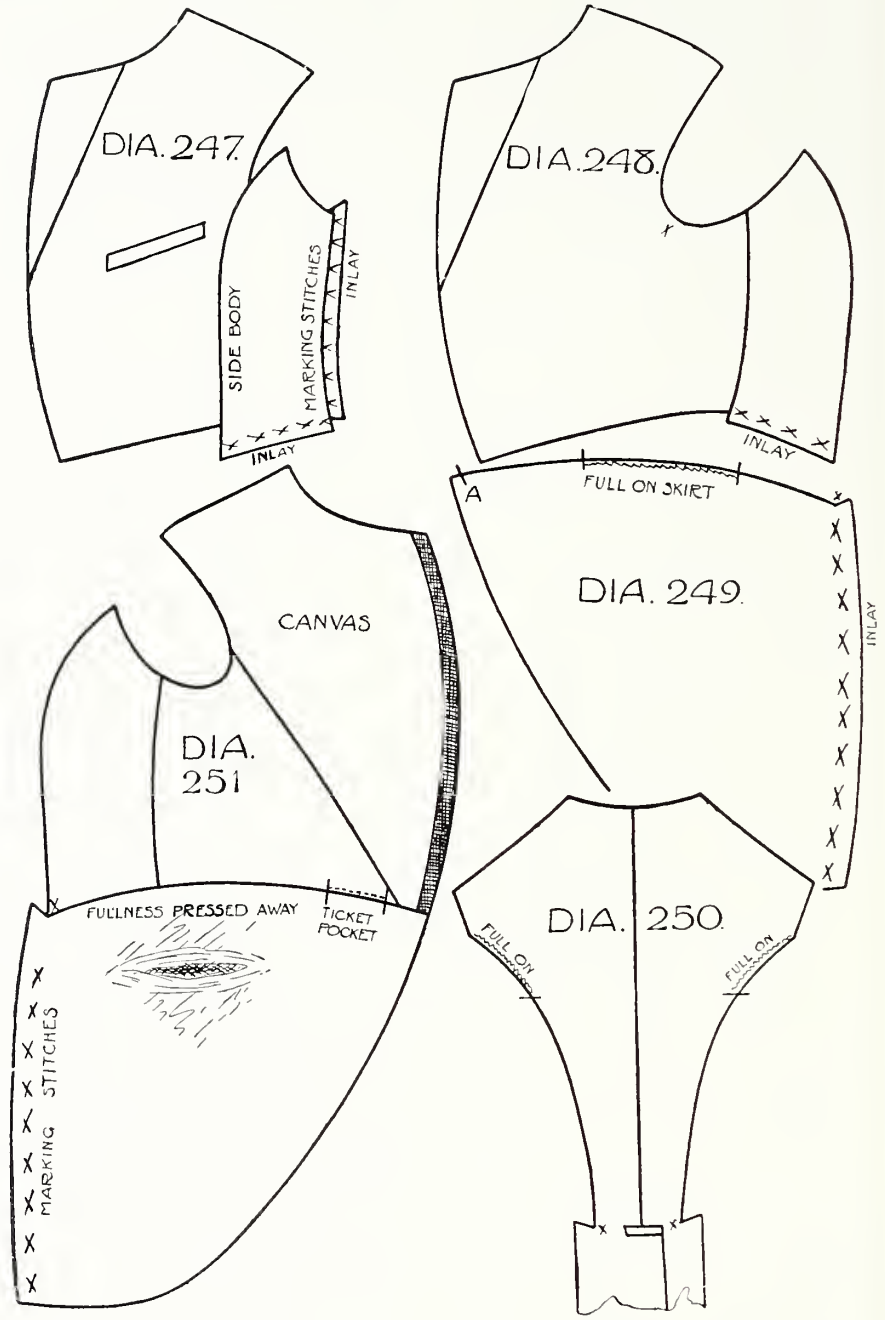
The object of the present chapter is to prove the fallacy of such arguments, and to show how, in the hands of a competent machinist, who knows how to regulate the stitch and pressure foot, this stretching will not occur.

This machine sewing of the waist-seam is not an innovation of recent date by any means. Thirty years ago, when the Frock Coat was more fashionable than to-day, there were machinists who successfully performed the operation, despite the head-shakings of the hand-sewing tailors. Moreover there was no basting put in to assist the operator. But times and methods have changed since then, and it is now the accepted thing in the majority of up-to-date workrooms.

Although the making of a Morning Coat has been described previously, it should be understood it is not the first thing a machinist has to do when opening the parcel for the piecing up of the garment. That subject was taken first because its study and mastery would help the reader to better understand the present chapter.

In piecing up a Morning Coat the first operation is to make the outside breast pocket where one is required ; this, however, has been described previously, and therefore requires no further consideration.

After making the breast pocket the sidebody is sewn on to the forepart, as shown on Diagram 247. The small crosses are



the forepart and sidebody, and the marking-stitches of the inlay.

In sewing on the sidebody a small point of the forepart is left out, as indicated on the diagram, so that when the seam is pressed open the scye will be level all round.

As every allowance has been made by the cutter for stretching the sidebody-seam, it must, of course, be observed when sewing this on, that the marking stitches of the sidebody are level with the waist-seam of the forepart.

A glance at Diagram 247 will reveal how the points meet, and that the forepart is underneath and on the wheel of the machine, and the sidebody on top for sewing purposes.

When the seam is pressed open these

sections of the garment are as represented on Diagram 248, and ready for the skirt to be joined thereto. Some tailors first baste on the canvas and haircloth, while others do this after the skirt has been sewn on ; but this need not be discussed at present.

Now comes the important process of sewing on the forepart to the skirt, and in so doing preventing the seam from being stretched. First loosen the pressure-foot by one turn to the left ; make a smaller stitch than for the sidebody sewing, and then loosen the top tension only by one turn to the left. These are the three essential points for securing elasticity of stitch, and precluding the seam from being stretched during the process of sewing.

Having thus regulated the tension and foot, place the forepart on the wheel first, with the sidebody towards the back wheel. On this put the skirt on the wrong side, and place the corner of the skirt to the sidebody where the cross is marked on the inlay.

The edge of the skirt should be level with the marking stitches of the inlay, and a seam is sewn as far as the side-body-seam. Break off at the top and bottom silk or thread, as the case may be.

Next turn the skirt over so that the skirt will be on the feed-wheel, and the forepart on the skirt, leaving out an eighth of an inch of the skirt at the front, as marked A, Diagram 249. Sew an ordinary seam up to about four inches, then begin to full on the skirt up to the sidebody-seam. In doing this place the right hand between the skirt and the forepart, and equalise the fulness all along, without pulling the forepart.

The forepart and the fulness of the skirt will pass between the pressure-foot and the feed-wheel quite easily without any pushing, by reason of the fact that the pressure-foot has been previously loosened to make room for this emergency. When the seam is pressed open it will be found as accurate as if it had been sewn by hand.

If the material is thick, such as is used for liveries, the pressure-foot must be loosed in proportion ; whilst the top tension has to be tightened in stouter material ; but of this, more anon. What has been written refers to fine material, where no flaps are put in the waist-seam.

Whilst the foreparts are being got ready and worked up, the machinist should have changed his stitch and pressure-foot to do other work in the meantime.

It is assumed, however, the foreparts and back are ready for closing up the sideseam, as represented by Diagrams 250 and 251. For this purpose the stitch, top tension and pressure-foot must be changed to where they were for sewing across the waist-seam. It matters not whether the right or left forepart is closed first, but in either case the back must be on the wheel. If the left sideseam is closed or sewn first, the neck of the back will be towards the machinist.

Place the corner-point of the left sidebody (marked with X on Diagram 251) on to the corner-point of the back (also marked with a cross on Diagram 250) and sew an ordinary seam up to within about 3-ins. from the top of the sideseam, when the back will be slightly and gradually fulled on, as indicated on the diagram. This is in order to give a little freedom to the back blade.

The right forepart is then sewn together in a similar way, and the crosses on both back and forepart must meet.

Some Morning Coats have a ticket-pocket, in the waist-seam of the right-forepart. This is put in without interfering with the stitches of the waist-seam until the garment is ready for taking in.

To make this ticket-pocket, mark off on the wrong side of the right forepart waist-seam, 1½-ins. from the front, and then 2½-ins.

Sew on the seam of the skirt from chalk to chalk a piece of silesia, and stitch with a piece of staytape. Then on the other half of the silesia sew on a pocket facing of the same material to the seam of the forepart right next to the sewing of the waist seam, as shown by the dotted lines on Diagram 251. Then sew the silesia round, making the depth of the pocket about 3-ins. Turn the forepart over on the right side, and put a few straight tacks through the canvas.

MAKING MORNING COATS.

The next process is sewing up the shoulders and sewing on the collar by machine. These two items, however, were dealt with in connection with Diagrams 206 to 208, therefore it is unnecessary even to recapitulate.

The shoulder and collar processes completed, the putting in of the pleat pockets calls for attention.

Preliminary to this, a word with reference to the sewing across of the waist-seam, when there is either a skirt pocket with a flap or a false flap, may not be wasted. In this case, in order to ensure the fulness across the skirt-seam being equally divided, as though there was no flap, the flap must first be stitched across the waist-seam before the forepart is sewn on, and to do this the procedure is as follows :

The position where the flap is to be placed should be marked with a slight notch back and front. The flap having been previously made, if it is a stitched one, place the front side of the flap to the front notch of the skirt and level with the top-seam. Stretch the flap down in the stitching, half-way of the flap, and as far as point B, Diagram 252, and make a straight tack, as shown on the diagram, $\frac{1}{4}$-in. deep ; then place the backpart of the flap to the back notch, and put the same tacking as in the front.

The fulness of the skirt, which is between the flap, in proper position must be placed so as to sew across the forepart. To do this, stitch the flap across the skirt raw edge, as fine as possible, and gradually dispose of the fulness by placing the right hand between the flap and the skirt until point B is reached.

Now sew on the forepart to the skirt, as explained in the last chapter, as though it were an ordinary seam, without any fulness, because the fulness has been arranged in position by having stitched the flap across the waist-seam.

With the additional material on the flap, and flap lining on the biased seam, we must take that amount off the pressure-foot to prevent stretching. The pressure-foot must, therefore, be loosed one turn and-a-half from the ordinary seam, and instead of one turn from the seam without a flap.

If the flaps are bound, or bluffed edge, or flat-braided, a different method of tacking the flap to the skirt must be adopted ; this, however, will be described in the next chapter.

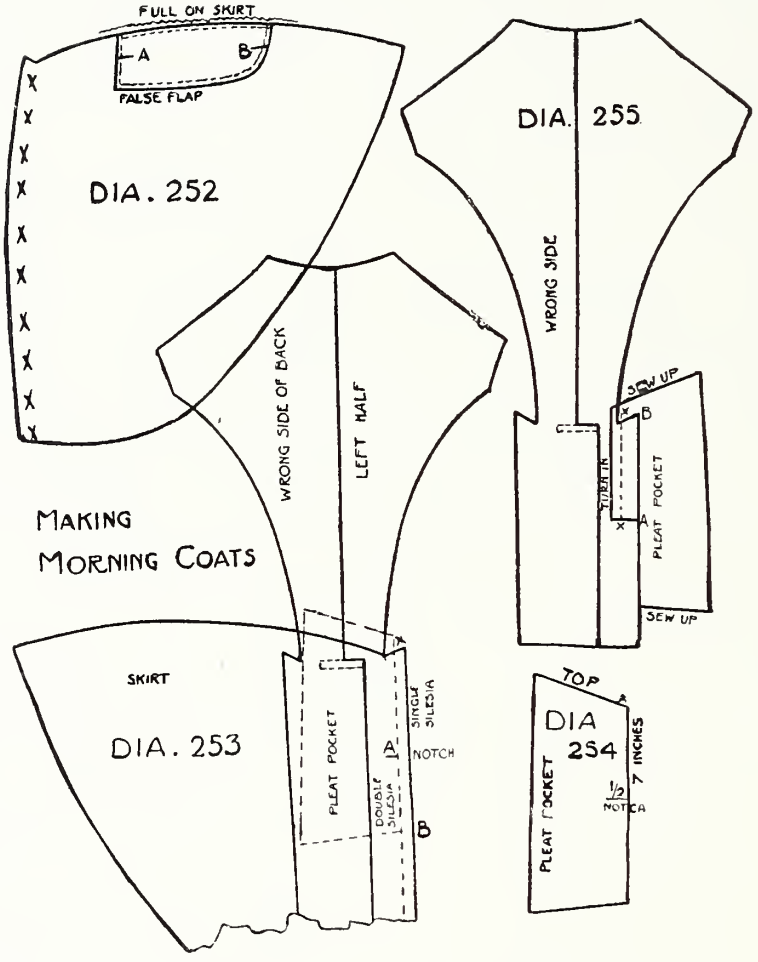
The closing of the Morning Coat may now be completed by putting in the pleat pocket.

A strip of linen should first be basted on the forepart skirt. Then make a straight stitch down the back skirt, $\frac{1}{4}$-in. apart from the sideseam corner, as shown by the dotted lines from X to X, Diagram 253. In doing this, place the right hand between the back skirt and the forepart skirt, and gradually full on the forepart skirt, until the round of the latter becomes almost straight. But if the tailor had fulled on the skirt when basting on the strip of linen, then when sewing down back skirts to keep in position, disperse the fulness so that it shall be even all the way down, otherwise there will be a crooked pleat the right side.

In sewing this down the forepart skirt is to be on the feed-wheel and the back on top of that.

Diagram 254 is the pleat pocket, cut from silesia to the shape required. Mark off 7-ins. from the top indicated by X, and make a notch $\frac{1}{2}$-in. deep, as shown on the diagram ; place your finger on the point where the notches have been made and turn away the underpart of the silesia from X as far as the notch, so that from the X to the notch the silesia will be single, and from the notch to the bottom, double.

Place this pocket on the back skirt, as shown on Diagram 253, and on the dotted lines of the same diagram, and leave out an inch of the pocket at the top and above the hook. The position of this pocket with the dotted lines is indicated on Diagram 253. The edge of the pocket should be level with the stitching previously sewn. Now, while in that position, sew on the pocket to the back skirt an ordinary width seam, commencing from point X on Diagram 253 to



point A. This is on the single silesia, and from A to B, and without breaking off the silk or thread, sew the remainder of the pocket on the double. This is indicated on the diagram to prevent any mistake. Break off top and bottom silk and bring the pocket over, and it is then in the position shown on Diagram 255.

Part of the silesia, previously notched, is protruding beyond the stitching from X to X, as on Diagram 253.

Turn the back and forepart round so that the neck of the back shall be towards the wheel, and the pleat pocket towards you. Turn in that part of the silesia half-way, making the dotted lines on Diagram 255, the centre crease. In between that put a piece of staytape, and make a short tack right through at points A and B, Diagram 255, and in so doing see that the staytape is caught with it.

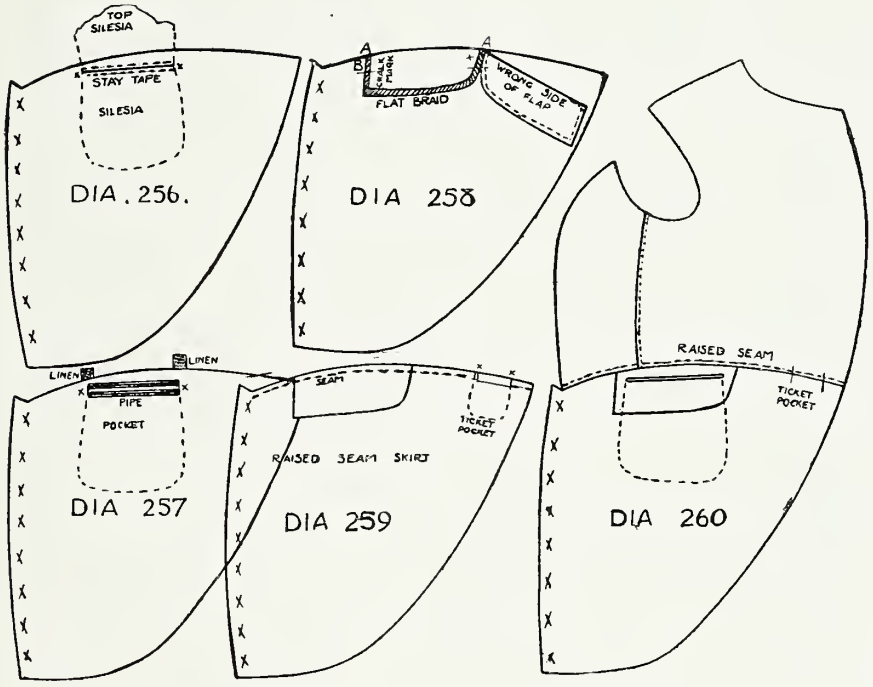
When the skirt lining is felled on the pocket-mouth, this staytape is also caught with it, which prevents the pocket-mouth from gaping, and, at the same time, lends durability to the pocket.

A word about the kind of stitch required for the making of this pocket, and the regulation of the pressure-foot. With the linen under the forepart skirt, and the pocket on the top of the back skirt, there need not be any fear of the back skirt being in any way stretched. The stitch, therefore, should be the same as for an ordinary seam ; but the pressure-foot should be loosed one turn, as from the ordinary seam. After the pocket has been tacked as mentioned it is sewn up at the top and bottom. This completes the pocket.

In order that both pockets shall be in the position, after the left pocket has been made, make a chalk-mark, at point A, and also at the bottom of the pocket, and knock off the right half-back.

Through carelessness, occasionally one pocket is higher than the other, which makes it uncomfortable for the customer.

At one time pleat pockets were put in the back skirt for the hand to be put in on the outside of the skirt, instead of the inside ; but as pockets of that kind are not in use at the present time, it is unnecessary to describe the method, except to say that it is entirely different.



SKIRT FLAP POCKETS.

Shooting Coats, and not a few Morning Coats, have pockets on the hips, instead of or in addition to, pleat pockets, and the present chapter will be devoted to a description of the making of same.

The position of the pocket-mouth should first be marked as on Diagram 256. The heavy line with the X at each end represents the pocket-mouth, and to make same this procedure should be followed.

Place the skirt, right side up, with the bottom of it towards the big wheel, and under the chalk-mark place a strip of linen. Take one-half of the pocket or silesia and turn it in about ½-in. Place this one-sixteenth of an inch above the chalk-mark, and sew on edge of silesia from cross to cross. Break off top and bottom silk and turn the skirt round so that the waist-seam will be towards the large wheel. Take the other half of the silesia ; turn that in also and place in between, and up to the edge of piece of staytape ; then sew that on the skirt, with the staytape, the same width below the pocket-mouth as the top half. Now cut open the pocket-mouth, which will be the chalk line from cross to cross.

These pockets have to be made as thin and flat as possible to prevent leaving any marks on the right side of the flap.

Pull through the pocket-mouth the lower part of the pocket, and form a piping of the silesia so as to be level with the edge of the pocket-mouth, and stitch in the seam.

A glance at Diagram 257 will show what is meant by the formation of the piping. This done, pull the top part of the silesia through the mouth, and let the silesia rest upon the top of the pocket, and stitch this down on the edge, which also forms a sort of piping.

In addition to the linen under the pocket-mouth, place another piece of linen under each corner of the pocket-mouth, marked by a cross, and bring this linen up to the waist-seam. Then make a couple of straight tacks at each end, and bring this stitching up to the waist-seam and through the linen. This gives greater durability and support for the pocket, which, in shooting or farmer's coats, is of great importance. Finish by sewing up the pocket.

The old style of making this pocket was to bring the silesia over as in a Lounge, which made a thick edge to the pocket-mouth, and left a mark on the flap when pressed down. This mark showed very prominently, especially in a grey worsted or blue serge. The method described prevents this unsightly mark.

When the pocket is put in, the flap, when made, is placed on this, and if it is single or double-stitched, the flap is stitched to the skirt on the edge, and also a short tack is made lengthwise, half-way of the flap. This method of tacking the flap down on the edge cannot, however, be done with a flat-braided flap, or a stitched on braid, or a bluffed edge. If this were done it would have the appearance of a patch on the skirt. Anything which gives that appearance must, of course, be avoided.

The mere (and only) tacking lengthwise, as shown by point B on Diagram 258, will not remove the difficulty, because the wearer would then be able to put his finger through at the side of the flap, and would consider the garment unfinished, and rightly so.

The sides of a bound or flat-braided flap must be secured by invisible machine stitches, which will not only give the flap firmness, but at the same time an artistic appearance. The following method should

therefore be adopted: Place the flap, if flat-braided, or stitched on braid, over the pocket-mouth, and in the correct position, then make a chalk-mark at each side of the flap, by the edge, and half-way down, as shown by points A to B on Diagram 258. Make a chalk-mark, also, lengthwise, as shown. Now turn the flap on the wrong side, so that it falls into the position as shown on Diagram 258. Turn the skirt round so that the waist-seam is towards you, with the flap in the position as indicated. Stitch the braid down from point B to A, very fine on the first edge, with a small and tight stitch. Turn the flap back so that it will reach the backpart of A to B.

Now lift the flap over and stitch on the edge of braid from A to B, the same as was done from B to A.

The opening between A and A, on Diagram 258, is sufficiently wide to admit of stitching down the backpart the same as the front without any difficulty.

Break off top and bottom silk; straighten the flap and skirt, and stitch down the flap on the inside of the braid, where marked by a cross, and as far as point B on each side of the flap. When the flap is pressed down with a piece of linen it looks not only workmanlike, but tasteful. The forepart is then sewn on in the usual way.

SKIRT TICKET POCKETS.

In the last chapter the making of a ticket pocket in an ordinary seam of a Morning Coat was described; but in a Shooting Coat the method used differs somewhat. All the seams have to be raised in the latter, including the waist-seam frequently, hence a variation has to be made, because a seam is not formed from the forepart but from the pocket facing of the ticket-pocket. In this case the position of the ticket-pocket is marked off on the skirt, as shown from X to X, Diagram 259. Place the silesia on that and sew an ordinary seam with a piece of staytape from cross to cross. Notch the skirt at each end of the cross as far as the sewing. Turn in the pocket, which is represented by the thick lines from X to X, on Diagram 259. Stitch this under-pocket, either swelled edge or double-stitched to match the edges.

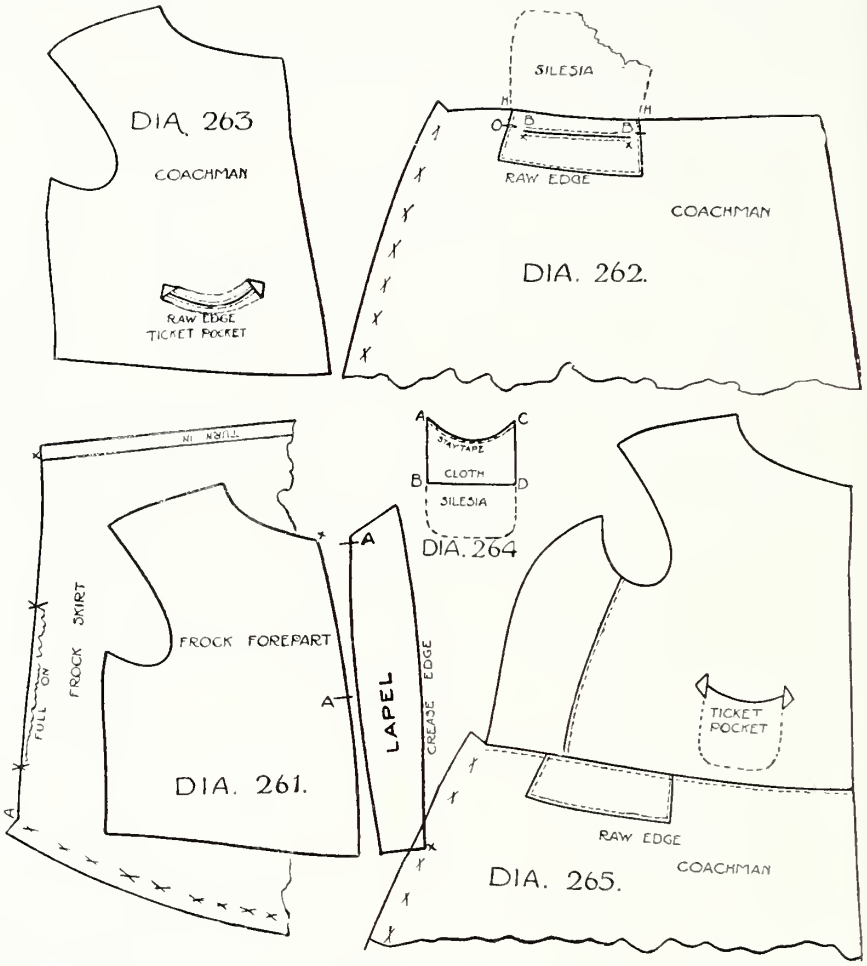
Stitch a pocket-facing on the other half of the ticket-pocket, and bring that up to the edge of the skirt, as shown by the dotted lines from X to X, Diagram 259, and sew round the ticket-pocket.

When the waist-seam has to be raised a part of the skirt has to be left out for raising over when the forepart is sewn across, as indicated by the dotted lines at the waist-seam.

When sewing on the forepart care must be taken not to sew with the underpart of the ticket-pocket, but sew with the pocket-facing of the ticket-pocket.

If a small ticket-pocket flap is also required, make the flap, and after the ticket-pocket has been made as described, place the flap on the points marked from X to X, and stitch it across the edge, as shown by the dotted lines, and then sew the forepart to the skirt, and take with the flap as well as the pocket-facing.

When there is a ticket-pocket flap the pocket-facing is of italian, so as to avoid a bulky, clumsy effect.



After the forepart has been sewn on it is raised across the waist-seam, and this stitching has to be done on the forepart, as shown by the dotted lines on Diagram 260.

MAKING FROCK AND COACHMAN'S COATS.

The making of a Frock Coat back has been already described, also the closing of the side-seams, shoulders and collar, and putting in of pleat pockets, which are the same as for Morning Coats, already dealt with.

The first thing to do in this connection in making a Frock Coat is to sew on the lapel to the forepart. This lapel is cut on the double with a creased edge. Proceed as follows:

Place the forepart on the feed-wheel, and upon this the lapel. Leave out about ½-in. of the lapel above the forepart, as shown by the point marked A on Diagram 261.

Put point A to the point marked with a cross on the forepart.

From that point full on the forepart as far as point A on the forepart, and then evenly to the end.

If a portion of the lapel goes out at the bottom it does not matter, as it has to be shaped by the tailor before sewing on across the waist.

The fulness from point X to A, which is the turn for the lapel, is allowed for an easy turn for the shape of the lapel.

The length of the turn of the lapel should always be marked as a guide to the machinist, as they vary considerably. Some frocks button two, others three, and some even one, and the same remarks as to length of turn apply to Dress Coats also.

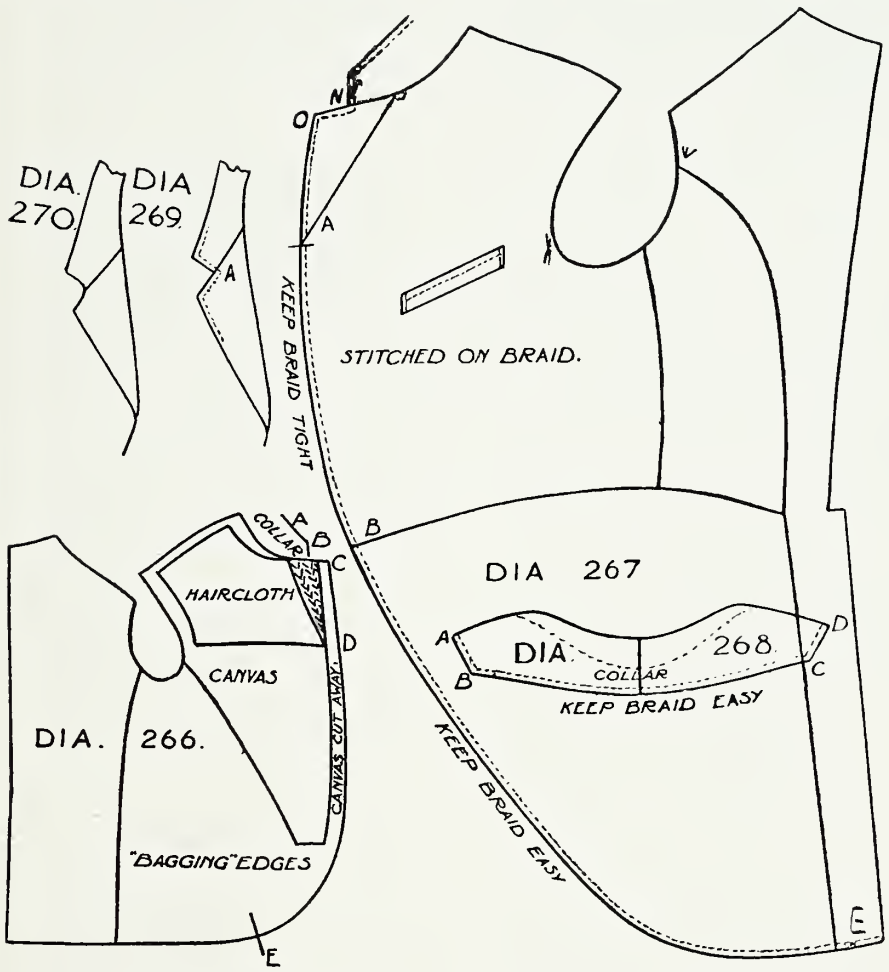
The sewing on of the forepart to the skirt must now be undertaken, whether before or after canvassing does not matter.

The regulation of the stitch and pressure-foot is the same as for Morning Coats, as previously described. There is always about an inch allowed in the front of skirt for turning in.

In sewing on the forepart place the crease edge of the lapel, marked by X at the bottom, to the turn-in point of the skirt also marked with X, on Diagram 261.

The pocket-mouth is first marked as shown by the thick line, B B, on Diagram 262.

Place the skirt with the bottom towards the left hand. Underneath the chalk-mark of the skirt place one-half of the silesia, leaving out ½-in. of the same beyond the chalk-mark, and under the silesia place a strip of linen to go a little beyond B and B. That accomplished, stitch under the pocket, as shown from X to X on Diagram, 262. Then pull the silesia downwards and make



From that point sew a level seam 5-ins., and then full on the skirt to ½-in. beyond the side-body seam.

The skirt should always be on the feed-wheel.

If there is an inlay at the bottom of the sidebody, then break off the silk or thread at the sidebody-seam, and put the sidebody on the wheel and begin from the back skirt, marked A, and complete the sewing of the skirt.

The making of a raw-edge skirt pocket in a coachman's coat now comes in for consideration.

another row of stitching under the first one, ½-in. wide.

On the other half of the pocket sew on a pocket facing of the same material.

Turn the skirt over on the wrong side and place this half-pocket on the other one, and a little above the pocket-mouth chalk and sew up the pocket.

Next turn the skirt over on the right side and make two rows of stitching on the top of the pocket-mouth, the same as at the bottom.

At each corner of B and B place a piece of linen ; bring it up to the skirt line and make a straight tack at each end from B to X. The pocket is then complete, and the pocket-mouth may be cut open.

The flap, which is cut to shape, is placed upon a similar piece of material, and double-stitched raw edge.

The surplus flap lining is then pared round at the sides.

Now place the flap on the skirt at the points where notched, H H, and stitch in the same stitches the flap to the skirt, as far as O, a short tack lengthwise, as shown by the thick line at point O, and up again through the second row of the stitching of the flap to the waist line.

As the flap lining is the same as the flap, there would be three thicknesses of cloth to sew across the waist-seam. This we can, however, reduce to two thicknesses so as to make it thinner.

Cut away ¾-in. of the flap lining from one inside stitching to the other, as from H to H. Now lift up the flap and stitch the flap lining to the skirt, raw edge. This method reduces the thickness of the waist-seam.

CRESCENT-SHAPE TICKET-POCKET.

As a rule, coachmen have a ticket-pocket in the forepart, and this is half-moon shape, and put in raw edge. The first thing is to make a chalk-mark on the forepart, from point to point, crescent-shape. Take a square piece of the same material, and putting face downwards to the forepart, knock together, and thus get an impression of the shape of the pocket, cutting it out as shown from A to C, on Diagram 264.

B and D on the same diagram will be square. Sew one of the pockets on to the cloth from B to D.

On the wrong side of the cloth of Diagram 264, and from point A to C, stitch round a piece of staytape, a little from the edge, as shown by the dotted lines. Keep the staytape a little tight. Now cut the half-moon shape pocket-mouth open, as shown by the thick line on Diagram 263.

Place Diagram 264 under this pocket-mouth, with the staytape in between, and stitch it round raw edge, and then a second row, as indicated by the dotted lines on Diagram 263.

On the other half of the pocket sew on another square piece of the same material ; place that above the two points and sew up the pocket.

Then stitch the two rows above the same as the lower part, and complete the corners as shown by the thick lines on Diagram 263. This completes the pocket.

The waist-seam in this coat, instead of being sewn on with an ordinary seam, is stitched on raw edge, as shown by Diagram 265, and without basting, and the fulness is allowed on, and in the same position as for the Frock Coat.

There is no crease edge at the lapel, so the stitching of the forepart of the skirt is begun from the edge of the lapel.

COAT BAGGING.

The next process for the machinist after the closing of the sideseam, shoulder, and the sewing in of the collar, is the seaming round of the edges after being basted under.

There are two methods of doing this: one where the linen or staytape is put on by hand, and the other where the expert machinist will put the linen or staytape on by the machine without basting, at the same time whilst seaming round the edges. Both methods, however, will be described.

In the eyes of many tailors of the old school the latter method, known as "bagging," is synonymous with inferior workmanship. This, however, is a mistake. When properly done by a competent machinist there is nothing inferior about the workmanship whatever.

"Bagging" is merely an extension of sewing a short seam a little longer, and its application is used when the collar and the corners of the lapel are sewn round by the machine, as well as the front edges. Of course this is the modern method resorted to in the wholesale trade, and in many subdivision workshops.

The hand-sewing tailor seams round his fronts and the corners of the lapels only, and in the majority of cases by the machine, or it is done for him by the machinist. This he does not consider in any way detrimental to the garment, nor a reflection on the workmanship; but because the more modern tailor includes the seaming of the collar at the same time as the fronts, this is termed "bagging"—the word being used in an offensive sense.

There are those who favour the bagging of coats, but who say a clear corner at the collar point cannot be obtained. But that is the fault of the machinist, and not of the method adopted.

The first method described is where the linen is put on by hand first, and where the collar as well as the fronts are to be sewn round.

The bottom of the garment is not sewn round in the better-class work that is felled, so the seaming round the edges is begun from where the facing begins, a narrow seam, as far as the corner of the lapel marked A on Diagram 269. Then stop and sew down the side as far as the corner, marked A, in the inside of Diagram 269.

Break off top and bottom silk and begin to sew only one stitch apart from point A to B; stop, and then continue.

The reason that both top and bottom silks are broken off, and the sewing commenced again at almost the same point, is to prevent the collar corner from being round instead of a clean square corner when the garment is basted out. If this were not done a round corner would be produced, as represented on Diagram 270. This, of course, is not permissible, so the stitches are notched at that point to loosen the contracting stitch, with the result that the remainder of the stitches become loosened, and the tailor has to patch up the corner on the right side as best he can. In order to obviate this, break off the top and bottom silk at point A, on the inside corner, which does not admit of a contracting stitch, and there is no need to loosen it; hence a clean corner is obtained.

The next point to be dealt with is sewing on the linen by the machine. In this case the canvas is cut away from the front edge, as if the linen was to be put on by hand. The garment is then basted under. The machinist begins to sew the edges from the corner of the lapel to C, Diagram 266.

From C, put a strip of linen, and sew that with the edge as far as the break D. From point D to point E, at the bottom of the forepart, the linen is kept tight with the left hand, while the forepart and the facing are gradually fulled on with the right hand. The tailor will fasten the linen to the canvas and have the fulness pressed away before basting out the edges.

PUTTING ON BRAID.

The putting on of braid on the edge and collar without basting now merits a brief description. The collar in this case is sewn into the neck when closing the sideseam, but to simplify matters the collar and foreparts are illustrated in two sections.

The stitching on of the braid is either done on the right side of the garment and felled over on the facing, or stitched on the facings and felled on the right side. This depends upon the custom of the particular firm; but in either case the method of stitching on is the same.

It is assumed, however, for present purposes the braid has to be stitched on the right side. First of all the garment is placed under the arm of the machine, and the beginning is with the left forepart. In the first place the braid should be measured off from N to O, and then to A, on Diagram 267, and add on another $\frac{3}{4}$-in. Commence to stitch the braid on from point A, leaving out half of the width of the braid for felling over. Keep the braid in the left hand. From A to B keep the braid a little tight, and from B to E at the bottom of the back let the braid be level, that is to say, neither let it be tight nor easy, but guide it as it lays. Care should be taken that the width of the braid left out at point A is the same all round. At point E cut off the braid, but leave out about $\frac{1}{2}$-in. for making. Then do the right side the same.

Now turn the forepart over with the facing upwards, to stitch on the lapel.

Turn the braid over and commence from A to O. Stop and form a small pleat, and then up to N. From that point begin to stitch the braid on the collar, as shown on Diagram 268.

Begin at point A and stitch up to B. At that point make a small pleat, as on the lapel, and from B to C keep the braid easy. Make another pleat at point C and stitch up to D.

At each end of A and D leave out $\frac{1}{2}$-in. for working up.

SEWING IN SLEEVES.

The sewing in of sleeves without basting is one of the most difficult operations the machinist has to perform in garment making. It is quite different, for instance, from the sewing of an ordinary sideseam. In the first place, five or even six stops of the machine have to be made before the sleeve is completely sewn in, and at each stop care must be taken that the width of the seam is the same all round. If a wider or narrower seam is taken it will produce a crooked seam, and if it should be on the topsleeve, and the material be thin, the crookedness of the seam will show very prominently.

Then, again, in a subdivisional workshop where work is made for several shops with different cutters who use different systems more fulness is allowed on the topsleeve than others, and the machinist has to take this into consideration. It is no use sewing in the sleeve half-way, or part of the way, and then finding that the fulness cannot be got in the right place.

One pair of sleeves from one cutter may be sewn in quite correctly, and the fulness located where it should be, and the next pair cut by a different system, requiring more or less topsleeve fulness if treated in the same way would be altogether wrong. Furthermore, some cutters locate the front and back pitches differently to others, but even this does not exhaust the list of machinists' troubles, for they recommence when he has to go from a 40 breast to a 28 or 30 breast garment.

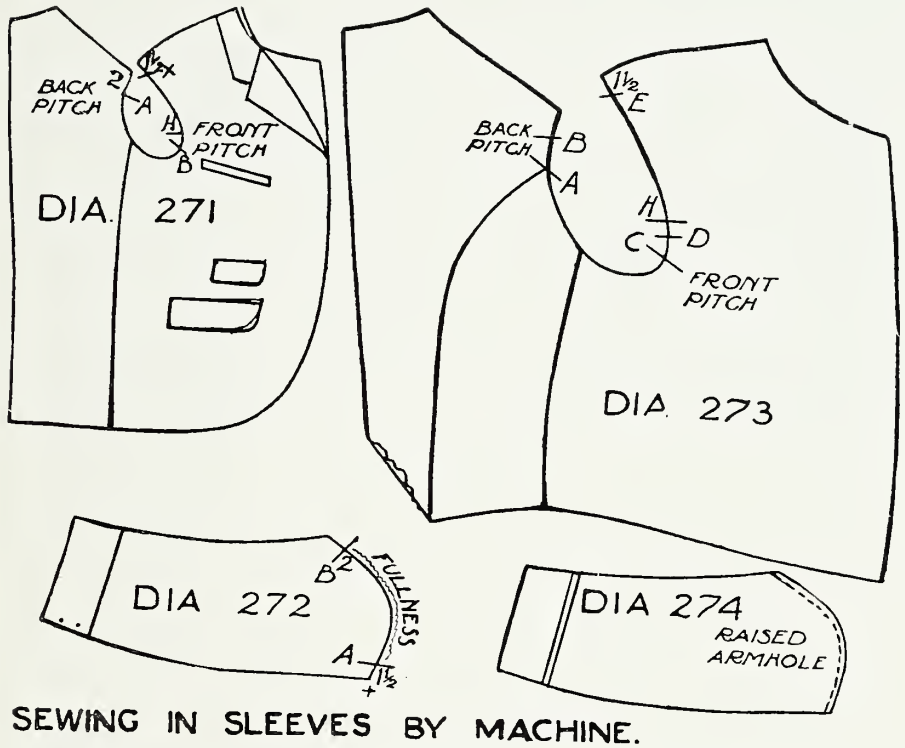
Let us see, however, how to calculate the distribution of the topsleeve fulness. Someone may say, "Why not baste in the sleeves, and so save all the worry, trouble and calculations of the machinist? It is so much easier to take out the basting cotton, if the sleeve does not hang properly than to rip open a sleeve sewn by the machine."

That may be, but the basting in of the sleeves is more a hindrance to the machinist

when sewing them in than if they were not basted in. Besides the machinist should be competent to put sleeves in without basting.

Sleeves are, of course, sewn in after the edges are basted out, and the sleeve itself has been made, including the sleeve lining.

As a rule the right sleeve is sewn first. The pitch of the back and the forearm is usually marked or notched 2-ins. down from the shoulder-seam (see Diagram 271). Mark with chalk, point A on the diagram, and take that as a pivot ; double the armhole and make a chalk-mark at the notch in the forepart, as shown by point B on the same diagram. Place the left hand through the right armhole, and with the right hand put the back-arm of the sleeve



SEWING IN SLEEVES BY MACHINE.

at the point marked by X on Diagram 272, to the back pitch, marked A on Diagram 271. Hold the two points together and place the sleeve on the feed-wheel. Commence to sew from that point to 1½ on the forepart, as marked by X on Diagram 272. Then stop, but do not lift up either foot or needle. Let the needle-bar be at the lowest point, then take the forearm pitch of the sleeve and place it to the front pitch of the forepart, marked B, Diagram 271, and see how much fulness of topsleeve is left. This gives an idea, before sewing, how much fulness is to be distributed between the points X and B on the forepart.

Loosen the forearm sleeve ; hold the armhole with the left hand ; place the right hand between the sleeve and the armhole, and full on the topsleeve from X to within 1½-ins. from the forearm pitch, as shown by the line marked H on Diagram 271.

At point H the last of the fullness must cease, and it must be observed that the forearm sleeve pitch is level with the forearm pitch of the forepart, B ; if these two points meet the sleeve will hang right.

Stop at point H so as to turn the sleeve round ; sew as far as the sideseam ; stop again to get a clear way, and sew up to the back pitch, from whence sewing commenced.

From point X to point H, where the fulness is distributed, make two or three stops of the machine, according to the size of the armhole ; but on no account lift up the foot or needle until the sewing in of the sleeve is completed.

The left sleeve is sewn in exactly the same as the right, but in this one sew from point A to the sideseam ; stop to turn round the sleeve, then get the forearm sleeve to the pitch B ; stop again and begin the fulness from 1½-ins. above the pitch-up to X and then to point A here break off. The stitch for sewing in the sleeves is to be the same kind as for sewing across the waist-seam of a morning coat, which has already been described.

The sewing in of the sleeves of morning or frock coats is the same in every respect as for the lounge or overcoat, the only difference being the pitch of the back. In some cases the pitch will be in the centre of the back, as shown by point B, on Diagram 273, and the forearm mark at D ; in other cases the back-seam will be pitched at the sideseam, as marked by point A on the same diagram, and the forearm pitch at C.

The more experienced the machinist the less number of stops will be made.

With regard to the armholes, the sleeve has to be sewn in the same as described, but a portion of the sleeve must be left out all round for raising over, as shown by the dotted lines on Diagram 274. In heavier materials the sleeves are sewn in and raised over before the lining is basted under, otherwise the work of raising becomes more difficult, taking longer than in thinner materials.

The width of the overlapping is, of course, to be the same as the sideseam and the sleeves.

"ODDS AND ENDS."

Before concluding this section of the book, a few odds and ends may be permitted just by way of clearing up what has been dropped on the way, and overlooked at the time.

To end on a lighter note, the few lines of verse have been inserted as not wholly inappropriate.

VELVET AND VELVETEEN.

The sewing of velvet and velveteen is more difficult than the ordinary materials the machinist is usually engaged upon. It is not so easy, for example, to sew a velvet seam, or to put in pockets, owing to the glossy and puffy surface, and when the two are put together to sew a seam it will shift. To avoid this, if the machinist works on a feed-wheel (better known as the round wheel), then the small screw which is in the centre of the clutch holding the wheel must be unscrewed, and the wheel slightly dropped so that the teeth of the latter will be level with the needle plate. This is done in order to take the pressure off the velvet, so that it shall pass through the foot and the wheel smoothly, then tighten up the screw.

In addition to this, when sewing a seam the two seams should be firmly held together, and only sew about eight or nine inches, then stop ; hold it again firmly until the next stop, when the full length of the seam is completed. In putting in velvet pockets the same methods should be adopted, but the stops must be shorter.

Where there is a drop-feed instead of a feed-wheel, the pressure-foot must be loosed two or three turns to the left, according to the stoutness of the material, to relieve the pressure from the inside

glossy surface. It takes longer to do this kind of work, but the results are more satisfactory.

The matching of the machine silk in coloured work is important. It should be remembered the silk for the machine should be a shade darker than the material, and not exactly the same colour, or a lighter shade. The lighter colours, after the application of the iron, resemble somewhat a patch on the garment, whilst a darker shade produces equally unsatisfactory effects.

It is well to match silk by daylight.

Always oil the machine at night when leaving off, and not in the morning. After oiling, work the machine a few seconds and wipe the head, bed and machine table, and leave clean.

Before leaving at night, place a small piece of material under the needle and drop the pressure-foot so as to absorb any of the oil which may have dropped from the needle-bar; this prevents the oil getting into the shuttle-catch, and thus obviates any soiling of coloured work.

Occasionally the treadle stick will work loose, and a sudden jerk will mar the smoothness of working of the machine, with the result that one of the cranks, or other part of the gear, will be displaced, causing slipped stitches. In this case it is advisable to call in the aid of a mechanic, as being the cheapest in the end.

THE SEWING MACHINE.

"Got one? Don't say so! Which did you get?
One of the kind to open and shut?
Own it, or hire it? How much did you pay?
Does it go with a crank, or a treadle? Say.
I'm a single man, and somewhat green;
Tell me about your sewing machine."

"Listen, my boy, and hear all about it—
I don't know what I could do without it;
I've owned one now for more than a year,
And like it so well, I call it 'my dear';
'Tis the cleverest thing that ever was seen,
This wonderful sewing machine.

"It's none of your angular Wheeler things,
With steel-shod beak, and cast-iron wings;
Its work would bother a hundred of his,
And worth a thousand? Indeed it is;
And has a way—you needn't stare—
Of combing and braiding its own back hair.

"Mine is not one of those stupid affairs
That stands in a corner, with what-nots and chairs,
And makes that dismal, headachy noise,
Which all the comfort of sewing destroys;
No rigid contrivance of lumber or steel,
But one with a natural spring in the heel.

"Mine is one of the kind to love,
And wear a shawl and a soft kid glove;
Has the merriest eyes, and dainty foot,
And sports the charming gaiter boot.
And a bonnet with feathers, and ribbons, and loops,
With any indefinite number of hoops.

"None of your patent machines for me,
Unless Dame Nature is the patentee;
I like the sort that can laugh and talk,
And take my arm for an evening walk;
That will do whatever the owner may choose,
With the slightest perceptible turn of the screws!

"One that can dance, and—possibly—flirt;
And make a pudding, as well as a shirt.
One that can sew without dropping a stitch,
And play the housewife, lady, or witch—
Ready to give the sagest advice,
Or do up your collars or things so nice.

"What do you think of my machine?
Ain't it the best that ever was seen?
'Tisn't a clumsy, mechanical toy,
But flesh and blood! Hear that, my boy?
With a turn for gossip and household affairs,
Which include, you know, the sewing of tears.

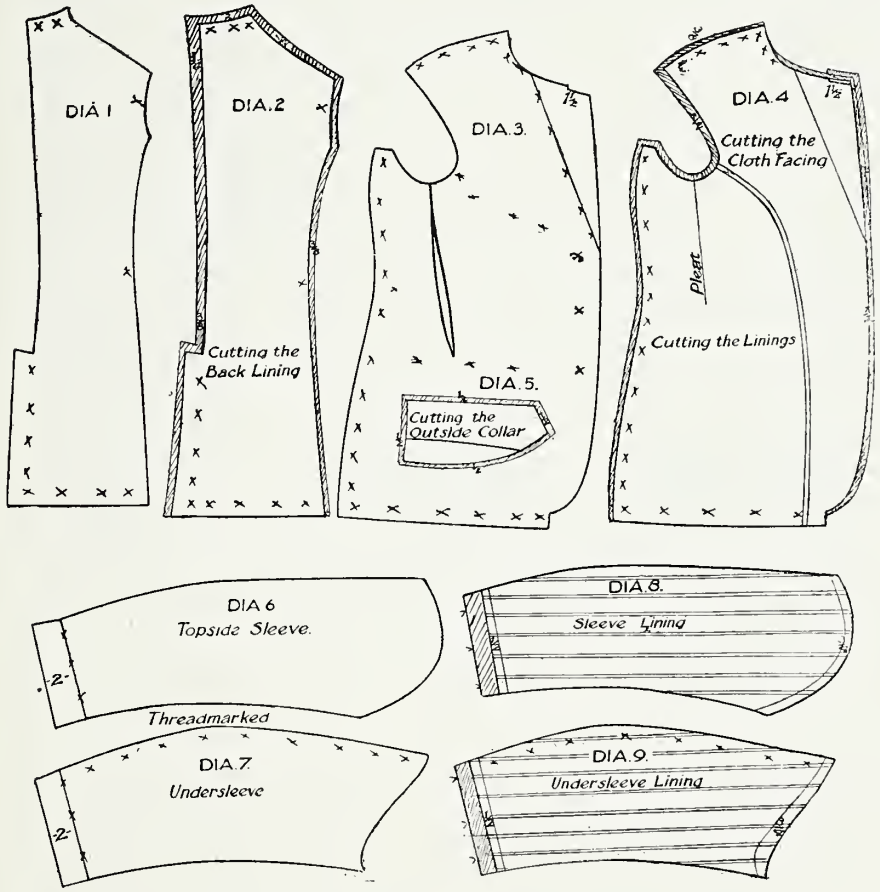
'Tut—tut, don't talk. I see it all—
You needn't keep winking so hard at the wall;
I know what your fidgety fumblings mean,
You would like, yourself, a sewing machine!
Well, get one, then—of the same design—
There were plenty left when I got mine!"

(END OF PART II.)

PART III.

HOW TO BAG A JACKET.

To add completeness to this publication and render it of the greatest service to its readers and students, we are giving in this part a selection of articles from various contributors, dealing mainly with up-to-date methods of garment making, in which the sewing machine plays the principal part.



Owing to various reasons many tailors find they cannot afford to put the same amount of hand labour in the cheaper suits as formerly, and consequently " bagging " is largely resorted to.

Before proceeding to deal with the fitting-up, it will not be out of place to point out that when " bagging " is to be rosorted to, the shoulders should be cut fairly straight, in order to reduce the amount of manipulation of the front to a minimum.

The principal thing is the fitting up, which must be done in accordance with the fact that each part must be cut to fit exactly, excepting parts where a little ease is necessary, which will be pointed out later.

We will presume that Diagrams 1, 2, 3, 4, 5, 6 and 7 illustrate the cut-out garment thread-marked, and comprise the back, forepart, top and undersleeve and collar.

When a coat is intended to be bagged it is necessary that every care should be bestowed on the cutting so as to reduce the chances of alterations to a low minimum. Special care must be given to the checking of the lengths of sideseams, fore and back-arm-seams, and last, but all-important, the length of collar.

THE FACINGS AND LINING.

After the thread-marking has been done, the next thing is the cutting of the facings and linings. It is here where practically the whole secret lies, for if the fitting up is not done properly you get, consequently, either tight linings, or other defects, which mar success to the venture.

Diagram 2 shows how the back lining should be cut ; while Diagram 4 illustrates the cutting of the facing and forepart lining.

In cutting the back lining it is best to allow it a little larger than the back all the way round, while down the centre of the back a pleat can be arranged. The cutting of the facings must be done carefully. The lapel step must be marked ; this is generally about $1\frac{1}{4}$-ins. to $1\frac{1}{2}$-ins. It is best to cut away the seam in the step, for it provides a straight run for the collar seam.

About $\frac{1}{2}$-in. extra may be left all round the shoulders and down the fronts, while a little extra may be left at the lapels, which requires a little surplus easing on, so that when turned out they will naturally curl inwards and retain a good form.

The lining must also be a little larger all the way round, say $\frac{1}{4}$-in. under down sideseam and $\frac{1}{2}$-in, at the scye ; while a seam must be provided where it joins the cloth facing. The general plan is to allow a pleat in the lining under the arms.

There are some who prefer to take out a similar underarm cut in the lining as in the forepart, but we think the pleat is the best, for it allows for ease when same is required.

After the cutting of the facings and lining, comes the cutting of

THE FLAPS AND POCKETS.

The flaps are cut about $\frac{1}{2}$-in. longer than the size of pocket-mouth desired, for in the seaming of the edge of flap almost that quantity is consumed by the time the flap is basted out. For a flap to finish $6\frac{1}{2}$-ins. in length, cut it 7-ins., and make the width $2\frac{3}{4}$-ins., which allows of $\frac{1}{2}$-in. for taking the stitching along the top of the flap, the latter, being finished $2\frac{1}{4}$-ins. deep.

The flap linings are best cut to the same size as the flaps, and a basting is run along

the centre of the flap, and then the latter is kept back all round a seam's width, which causes the lining to be smaller than the outside, which, when the flap is basted out, is nice and level, and there is no danger of the lining dropping at the bottom, which is an unsightly defect.

It is the safest plan to make up the flaps before cutting the pocket-mouth, which prevents the latter from getting cut too long.

We think our readers will be fully conversant with the putting in of pockets so we will pass on to

THE CANVAS.

This may be put through the shoulders and fronts on the straight, or may be arranged so that it is on the bias in the shoulders and straight down the fronts.

There is no doubt that a lot can be said in favour of the later plan, for it gives more elasticity to the shoulders ; but the former plan is no doubt the more general one adopted by tailors.

The shoulders are best shrunk in the centre and stretched at the part near to neckpoint, and also at the scye end.

The canvas requires slashing and wedging, after the style shown by Diagrams 10 and 12, in order that this shaping of the shoulders may be retained. If the canvas is not treated in this way a tying often results which shows itself by a crease on the shoulders.

Diagrams 10 and 11 illustrate the two methods of inserting the canvas.

Diagram 12 shows the press-out stage. Here is to be seen the position of the pocket stays, and the crease-row, bridled with a straight linen stay, while the fronts have a piece of linen put on to take the holes. The edges are only steadied with the staytape, which is best felled on.

BASTING ON THE FACING.

On Diagram 12 we are able to get a concise idea of the basting on of the facing. It will be noticed that a little extra is provided on the lapels for easing on, so as to allow of them forming a natural curl inwards when basted out.

Of course, in bagged coats the backs are joined to the foreparts, and the shoulder-seams sewn, the outside collar sewn on and pressed before the facings are basted on. These are also sewn up complete after the manner of the outside.

Diagram 13 shows the jacket with the backs sewn on, together with the inside collar, at the press-out stage.

After a drawing-thread has been inserted in crease-row of collar and lapels, the collar is set in position with the iron.

At this stage it will be found a capital plan to put a piece of staytape all round the inside of the collar crease, so as to hold it firm. This staytape requires to be kept fairly firm. The facings are also sewn up all together, after the style shown by Diagram 15.

The inside breast pocket is inserted, and in the North of England, where quilted facings are greatly in vogue, the wadding is quilted to facings at this juncture.

Before the facings are basted on, the outer collar is stretched on outer edge and slightly shrunk in centre.

Diagram 14 will give the reader some idea of how the facings are made up and basted to the outer shell for the seaming of the edges. A little fulness is allowed on the lapels and collar-ends, also a little extra width provided across the shoulders, and length to linings in the waist.

The rule followed in basting on the facings is to run a basting down the centre of back, and also to get the sideseams together.

The collar-seams are next basted one on top of the other, and also the shoulder-seams.

The scyes are next basted round after which a basting is run down centre of each front and along bottom.

The little fulness is next padded on lapels and collar ends, after which a firm and fairly close basting is put around the edge. The arrows denote the direction in which the edges are seamed by the machine. The seam taken should not exceed ¼-in., and must be very regularly sewn.

After the edges are seamed the seam is opened with an iron, after which it must be pared evenly.

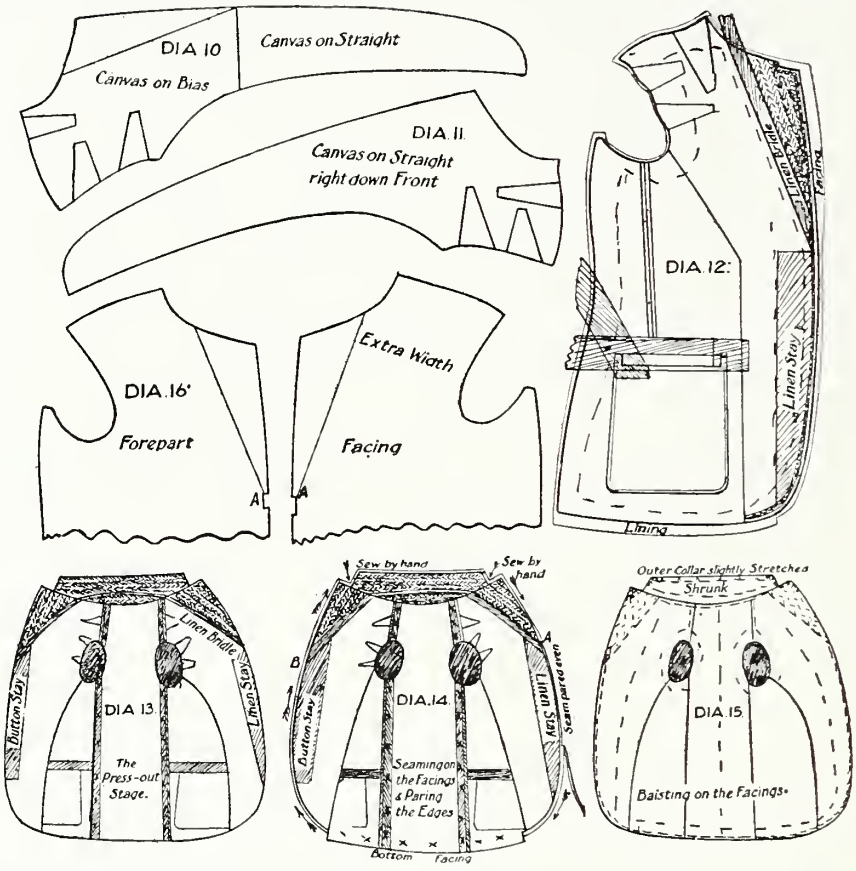
On Diagram 14 is shown the paring of edge as from A. On this diagram we show a bottom facing left on, for that is a plan in general use, and gives the coat a better finish.

The collar ends are best sewn round by hand so as to keep all firm, for the machine is very liable to move the seams and cause trouble.

At A and B many tailors prefer to take out small pieces in order to get a thin finish to ends of lapels. Diagram 16 illustrates this better.

On the forepart the small portion is cut away on the lapels above the crease of lapel. This should be about 1¾-ins. long and ¼-in. or seam width taken out.

On the facing, this small portion is cut out below the end of crease. The two portions at A are stoated finely together, and then the seams above and below are started by the hand, after which the edges are closely basted.



After the edges have been pared evenly all round they are generally soaped a little, and then the coat is turned out at one of the armholes, and the edges basted firmly all round. The seam is kept well back unless the material is a thin serge, when many prefer to keep them together, after the American style.

The collar is basted in position, and the facings in proper order, and then the edges are pressed flat and stitched.

In basting out the collar ends you must see that you get the ends rubbed out well, and also that a straight run is given to drawing-seam in line with step of lapels.

THE SLEEVES.

In making up the sleeves the linings are seamed up to the forearm after the style of those of the outside, and then seamed along the cuff facing, after which the hindarm-seam forms one continuous run. The sleeves are basted into the scyes, and the correct balance obtained before being finally sewn in, which is generally done by machine.

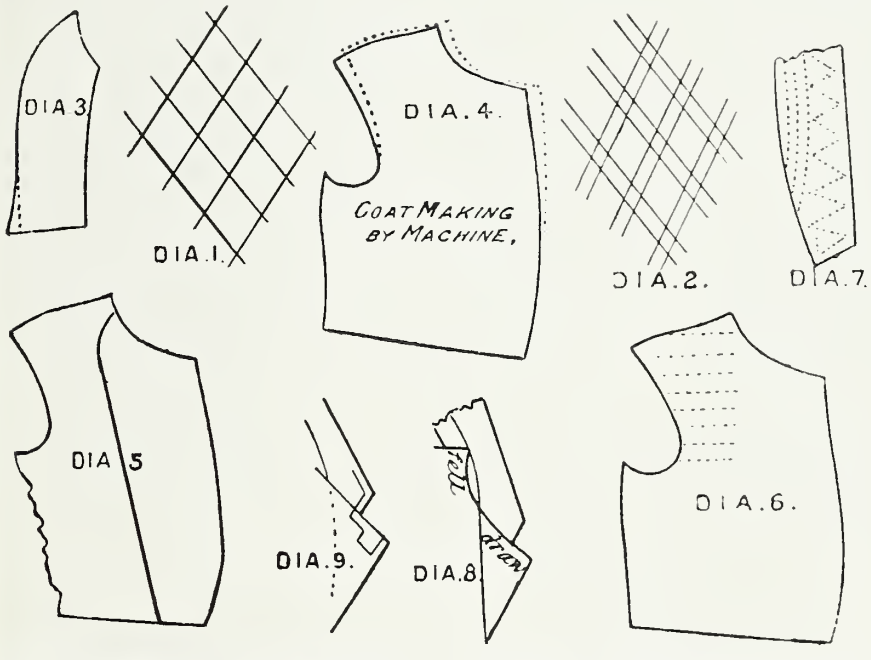
When basting in the sleeves for the machine you must baste very firmly, and be sure to distribute the fulness evenly on sleevehead, or the result will not be satisfactory.

Bagged coats are much more quickly made than if the ordinary method is followed. If the fitting up is carefully done, with practice a neatly finished garment, permissible for trades where the prices are cut low, can be made.

While we do not advocate the bagging of coats as an ideal method, yet we feel it is our duty to describe what may be termed a popular method of tailoring, which allows the tailor to compete in the market. Bagging coats can be successfully applied to subdivision methods of working. We have to meet the present-day requirements by new methods when prices are cut so fine ; but for the really good class trades hand-sewing must still be regarded as the superior method of making-up.

COAT MAKING BY MACHINE.

How to make a first-class coat by machine and still retain the quality of a hand-made garment—that is in my subject, so here goes. I must put down my foot on that class of work, how to put in an outside breast pocket without basting, etc. As a rule, all first-class trades have a female



machinist, and therefore expect her to do all the machining in this coat. First, as to a machinist : you must pick one that has been properly taught to make a hand-made vest, one who knows when a job is properly made ; as it is impossible to get a girl to do good and careful work if she has been brought up in a low-class shop.

We will take a morning coat of a good vicuna, with one row an eighth off the edge, and put into it all the machining that is suitable to do in an ordinary trade, and supposed to fit on. First smooth the canvas all over, sprinkling with water ; take the linen that is to stay the coat and wet it thoroughly, and smooth it until quite dry ; forgetting to do this will cause the linen to bubble up when pressing off. Then stretch the hollow in shoulder-seam and front shoulder where the shoulder bone comes forward, as we want a good square coat. Next press the marking-stitches on the round down back skirt until it is a straight line, smoothing the fulness nicely over the hips ; that is most important, as the back plait must be quite flat, and not round as cut. Baste your sidebodies to the forepart, also the welt and facing for outside breast.

Having cut your welts the proper way of the grain and handed them to the machinist, who should use a machine with a quadrant that enables the machine to sew backwards or forwards ; start the machine $\frac{1}{4}$-in. down and sew back. Lift the quadrant and the machine will instantly feed the right way, This fastens the ends and make a good flat job, sewing on to the bottom of the seam and reversing the feed again. This fastens the ends at bottom, using No. 24 twist ; if this cannot be afforded use 60/40 linen spool.

The thread must be smooth to get a good tension, so that both sides of the sewing are exactly alike, and not too tight, or it will crack in the pressing, which is done on a good flat board, as boards made of unseasoned wood are liable to warp.

After having pressed your seams, pulling it down a little while doing so, we next get our skirt, and, starting from the nick at top of back pleat, baste as far as the side body-seam, having previously put a stay across this part of the seam, in order that it may not stretch ; also a bit of the selvedge of the silk or linen on the side-body, paring both even with the edge of seam so that the machinist can see where she is seaming, not forgetting the stay that goes down the back pleat.

Then baste the remainder of the waist, holding the fulness nicely over the hip, and keeping the forepart on if anything a little full as it comes near to the front.

Having basted the waist seam so that the fulness is the same in both, get them seamed along, keeping the skirt next to the feed of the machine, as the machine will full on the underside, notwithstanding all you can do to prevent it.

Getting them nice and flat on the lap-board, smooth open the seams, watching not to stretch them, especially at the bottom of side-body ; if the seam is pulled out a little at the very end you may with confidence cut this off, as no cutter ever intends the side-body to be stretched out here.

SEE DIAGRAM 3.

Starting the back or top of sidebody-seam, baste the back on easy over the round, watching to keep it down a seam's breadth at top, so that when seamed the scye end will be flush, supposing there were no outlet at the top of sidebody.

When you come to the waist-seam, lay the job flat on the board and baste the back right down to the bottom, so that the crease will be in the thread-mark down back skirt, and watching that the back is the same width right down. To the side-seam it should be seamed with the back next the feed; if this is not watched, the machine is liable to twist the coat, and when finished one button will be higher than the other.

In tacking outside welt, great care has to be taken to get the welt quite flat and square with the edge, when the edge row at end of welt can be nicely stitched down through the canvas. After this it must be tacked by hand, as it is impossible to have a nice stitch and at the same time strong enough for a welt tack. This takes more time than if the welt were tacked by hand, and is not to be compared to the ready-made stylo of tacking welts.

The seaming round the calico pocket can be done by the machine, as it makes a flatter job, and is neater done than the usual way of half-back stitching them by hand.

Putting in the canvas is a nice job to do it right; the selvedge must be kept in two seams' breadth of the edge from the top of bottom button, that is if the edge is straight that far, as the selvedge of the canvas will not stretch; also put a piece of canvas about 4-ins. broad down front of skirt, keeping the straight of the canvas to the edge of skirt to keep the edge from stretching as much as possible. The great need for this is that the customer, when taking off the coat, stretches it on both sides in the front of the skirt to throw the coat back off his shoulder.

After putting on the staytape we shall proceed with the edge. The facing should be cut a little leant forward at the top,

SEE DIAGRAM 4,

so that when pulled back it gives ease at round of chest, and it is not necessary to keep the facing full up the edge by this method. As keeping the facing full up the buttonholes inclines the lapel to roll down to whore it never was intended, I seldom cut my facing to reach over to the bottom of seye, as it is a loss of stuff; odd stuff does equally well under the lining. I always have my edges stoated if possible, as it makes a much neater job than any other way. However, having notched the botton of lapel, and having cut away a seam's breadth from that up on the fore-part, and having cut a seam of the facing from that down, baste the edge in the usual tailoring way. If the stuff is thin we may seam round the top of lapel; if thick it will make a better job by felling it on the raw.

Having seamed the edge with the facing next the feed, so that the machine will full in the fulness nicely, we proceed and open it in the usual way. Pare away any extra material on the forepart side, turn it over, and put a row of basting on the very edge, and serge down the seam to the canvas. If this is not done the facing will turn out in a most unsightly manner; even the usual tack is put in across the waist-seam 5-ins. back from the edge. The skirt pockets should have been seamed across the bottom and nicked 9-ins. down for the pocket-mouth, then basted down the edge of back pleat; presuming that it has been cut about 1¼-ins. wide, this may be seamed down by machine.

If you want to condemn a first-class made coat, just open the pleat and show the customer the big grinning stitches that have been put in down the pleat; you will at once demonstrate that great care was not taken in the making.

Tho facings should be stitched with good taste: a good design is Diagram 1, rows 1-in. apart, or Diagram 2, with the near row ¼-in. apart.

There should be on all well-finished coats a binding down the back edge of facing; take a strip of silk or italian 1-in. braid, and as long as the facing, and baste it right down edge; then baste over on the inside of facing with silk, not lotting the stitches through, so that they will not have to come out again; lay this down on the lining, which should have been previously stitched, and put in a row nicely on the edge that has been seamed. This is a nice job, and should be done on all good coats.

When you want a coat thin at the collar bone, the facing should be quite like Diagram 5. When you want a shoulder stiff it should be stitched like Diagram 6.

THE SLEEVES.

Having basted a strip of canvas or sleeve lining on the bias, across the cuff, under the thread-marks, have the 1 or 2 row put on.

All sleeves should be notched the same as a pair of trousers are, as they are liable to be twisted in the seaming. If you want the forearm to keep well down at cuff, the forearm should be basted down flat. Now pull up the back-arm of underside ½-in., and baste down; this will throw the sleeve down at the thumb.

Having seamed the sleeves, also the lining, I cannot approve of machining in the sleeves, as it takes all the skill a tailor has to put in sleeves by hand.

The facing round seye should be serged with linen thread, not fore-stitched with basting cotton, as is often done, as the serging stretches, which is needed at that part.

We now join our coat-seam 1-in. up from back-tack, turn over, and put in a grape tack—not a brick tack, the same as goes in a shooting coat.

Now turn over and baste seam from top down; seeing there is no fulness, we may now have this seamed carefully, watching not to stretch back-seam in pressing.

We may now fell back lining and go on with the collar, which should be a melton made for the purpose, and cut well on the bias. Presuming we cannot pad it by hand, we stitch the stand with five rows, as Diagram 7, having first measured it, and given it a little stretch to get it near the shape, stitching leaf as seen, padding a little bit on at the point by hand to keep it well down. The edge of the collar may now be seamed; if thin, seam it round the ends; if thick, fell them, after turning it over and felling it on to the gorge, watching to hold it a little easy at shoulder-seam.

After basting up the canvas against the collar, nick the facing if the stuff is firm, and baste it up, too, from about 1-in. from the crease. Now turn in from the end of collar to this point, where the fronts of collar will be drawn; baste and fell on the raw from notch back, watching to fell the back lining on the collar. To make a strong and neat job of the ends of the collar, nick up to where the collar will be drawn, and about ¼-in. in, as in Diagram 8.

Press down under forepart facing and you will make a good square join,

SEE DIAGRAM 9.

The edge may now be nicely pressed and stitched. A guide can be used to advantage in this case, as there is no excuse for this edge row to be crooked with modern machines.

Having got the job back from machine, we may get our buttonholes spaced the proper distance apart, and if the spaces hit in the places where the canvas is cut out, it will be all right, presuming the holes will be put in by machine.

THE ROUTINE OF A SUBDIVISION WORKSHOP.

In order to convey to our readers a graphic idea of the working of a sub-division workshop, we will endeavour to describe the routine followed in a typical example.

It must be realised at the start that this style of working is most elastic, and the details of working will vary in almost every workshop. The quantity of basting employed may be much or little; the amount of handwork may vary in like manner, whilst there is scarcely a detail in

which labour may not be saved where the reduction of price is of the first importance.

Let us illustrate this point by the putting in of

A FLAP POCKET

on the hips of a jacket. Where this has to be done as speedily as possible the pocket-mouth is marked, and a piece of linen is placed under the forepart and adjusted, or held in its place by the hand or the machine; then the front portion of the pocket is stitched on, the back portion is placed with the flap under it in position, and it also is stitched on, all without basting. Then the pocket-mouth is cut, and the ends snipped in V shape; the front part of the pocket is turned in, and the edge adjusted as the machine runs a row of stitching across the lower part of the pocket-mouth. Then the back portion is turned inside, and the flap with it, so that the top of the pocket-mouth is finished very much like a raised seam, and on this a row of stitching is run by machine; the pocket is then stitched round, and after the canvas has been basted in the end of the pocket is tacked by working the machine backwards and forwards three or four times with a very fine stitch; this is done through the canvas in front, and through a linen-stay, which is held in position by the hand as the back-tacking is done.

Now the total time required to put in a pocket in this way may be reckoned in minutes, whereas the log time for putting in a pocket by hand is two hours, and there may be every possible variation between five and 120 minutes. Hence it will be seen how very variable this method of working may become, and consequently the wide diversity in

THE POSSIBLE ROUTINE.

The workshop is the scene, and the hour is 8 a.m., and a busy day is before the squad. The presser lit the gas stove directly he came in, and is now tidying up his board, getting a little clean water, and generally preparing for the work of the day.

The machinist has taken off the covering which she had put on the machine overnight, and is now giving some of the important bearings a drop of oil, if this has been omitted the night previous.

The finishers are brushing up the room, and have already opened the windows in order to secure proper ventilation, and whilst this is going on the manager is busy fitting up the first of a series of jobs, which happens to be a jacket. First he passes on the inside collar, sleeves, and sleeve linings, to the machinist, who seams up the back and any other join that may be necessary in the under-collar, and whilst she is stitching up the forearm of the sleeves and sleeve linings, the presser opens the seams of the inside collar.

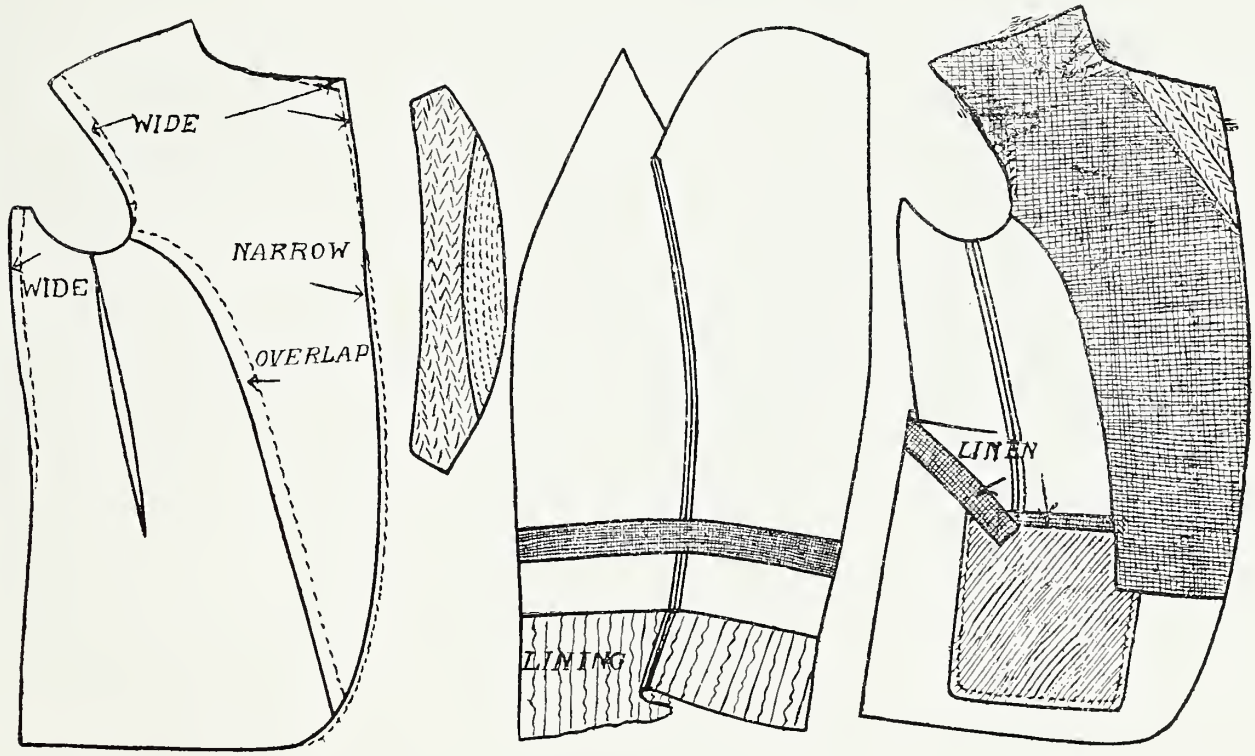
The forearm seams of the sleeves and sleeve linings having been sewn, and the linings machined on to the turn-up of the cuffs, they are passed on to the presser, who opens the seams and hands them to the manager to mark the position of the stitching on the cuff.

Meanwhile the machinist has taken

THE INSIDE COLLAR

and placed it on the collar canvas, and stitched the stand with three or four rows of stitching, when it is passed on to the finisher to pad the fall of the collar by hand, and so by this time the larger part of the squad is busy at work.

The machinist then places some canvas under the cuffs and puts in the stitching as marked, after which she seams up the hind-arm, using care to keep the cuff stitching accurately joined. This she returns to the presser, who opens the seams and hands it on to the finisher to flash-baste the lining to the sleeves ere she turns them out. Some cutters give out the length of the forearm-seam, and in that case the manager marks the exact spot where the cuff has to be turned up, so that the sleeves may be of the correct length.



If the cuffs are to be finished with slits, this will have to be arranged for, and the sleeves can then be completed by the finishers and presser.

Whilst this has been going on the manager has been busy fixing up

THE FACINGS AND LININGS.

The flaps are cut with due regard to the size and shape marked on the job, as well as to the matching of any pattern there may be in the material. The flap linings are cut a little smaller all round, and as soon as these are ready they are passed on to the machinist to stitch round, turn out, and stitch on the edge, when they are given a press by the presser, and are then ready for the machinist to put into the pocket.

In fitting up the facings the manager has provided $\frac{1}{4}$-in. or $\frac{3}{8}$-in. extra length and width over the turn, and has made the facings a trifle smaller below the turn. The linings have been cut with extra width across the shoulder, and sufficient allowanee made for a pleat down the centre of back and under the arm. In cutting the outside collar he made it about $\frac{1}{4}$-in. larger all round, so that the seam on the edge comes just underneath all round.

The manager having basted the poeket linen in place, the foreparts are handed on to the machinist, who stitehes on the top and bottom of the pocket. The pocket-mouth is then cut, and the pockets are turned in ready for the machinist to stitch the mouth top and bottom, as well as all round the pocket, when the presser takes it in hand for a few minutes, and gives this portion a press before the manager bastes the canvas in position and passes it on to the finishers to tack the pockets, pad the lapels, and arrange the stays down the edges.

In the meantime the machinist has proeeeded with the other forepart, and later with the linings, faeings and outside eollar, which are all seamed up, and the various seams opened.

If there has been an inside poeket ordered it has been inserted by the machinist and the ends tacked by the finisher.

When the facings are ready for stitching on, the same process has to be gone through with

THE OUTSIDE.

The side, shoulder and back-seams are stitched up and pressed open, the inside collar sewn on, and the ends very carefully adjusted, the end of the collar-seam carefully adjusted, the end of the collar-seam snipped, and then this is taken by the manager and compared to see that it goes together properly. If it is their custom to baste these two together he will do it: if not, the outside and linings will be handed to the machinist, who will stitch right round the edge, taking care to include the edge-stays in the first row of stitching; she will be very careful to stitch the top of the lapel so that it follows exactly in a line from the outside eollar seam; she will fell on the facing of the lapel at top and front, and also slightly full on the collar all round, and then for the rest part keep the corresponding seams together. When this has been done it will be taken in hand by the manager, who will carefully pare all the edges as close as his judgment will allow, and also cut the corners very elose, after which he will turn the whole thing out at the armhole, and see that the eorners are properly pulled out, when he will baste the edge, rolling it between his finger and thumb so as to get the seam right close up to the edge but just on the underside. When this has been done the presser can take it in hand and run the iron over the edges.

The manager then bastes over the facings, etc., round the scye, adjusting the material required for the turn by rolling the collar and lapels over in the style in which they will be worn.

Then a row of basting is put round the scye, and the bodypart is ready for the stitching of the edges, and

THE PUTTING IN OF THE SLEEVES.

If the machinist is an expert she will be able to stitch the sleeves in without basting, but if not it will be better for the manager to baste them in.

Then follows the opening of the scye-seam, the serging of the linings, and facing to the scye-seam, when the garment is ready to have the sleevehead felled by the finisher, a tab put on at the back of the neck, the button-holes put in by the button-holer, the garment pressed off by the presser, and the buttons sewn on as the final operation.

In attempting this description of the routine of a team workshop we have merely taken one garment, but it will, of course, be understood that

SEVERAL JOBS

will be progressing simultaneously, and, consequently, in our attempted description, some of the squad have had little to do during part of the time taken in the above description; yet when several jobs are all going together this would not be the case, and it will be for the manager to see that each worker is kept fully employed, and, if possible, the next job waiting on the completion of the first. At the same time it is not wise to have too many jobs going at once, or muddle may result.

Finish off the jobs as soon as possible. In general organising the aim must be to only use basting where it is absolutely indispensable, in order to obtain the desired result. The more basting put into the garment the greater will be the cost.

Another golden rule is to have everything ready to hand for the workers, or much time will be lost getting sewings, or waiting for irons of the right heat, etc.

Again, the shop should be of a proper temperature, say 70 degrees Fahrenheit. If the shop is too hot, or the ventilation is deficient, the workers will get drowsy, and apathetic. Use as much natural light as possible; artificial lighting is an excellent substitute, but it is expensive, and is more trying to the eyes than sunlight properly shaded.

Lastly, insist upon keeping the shop clean and tidy; it takes time, but it facilitates the work, and is calculated to produce a more careful, self-respecting spirit amongst the workers.

All employees should have a break in the day's labours for their meals, and the further meat and drink of all kinds are kept from the workshop, the better; whilst smoking is always detrimental and dirty, and is also best prohibited; but in all these points the manager must arrange his own rules.

Courtesy should be the rule, and cheerfulness and good humour ought to be cultivated, everyone being impressed with the importance of doing their bit to make the wheels of the machinery of the working of the team run smoothly.

DIVISIONAL LABOUR.

AN AMERICAN VIEW.

For purposes of comparison the dollar may be taken to represent 50d., i.e., 4s. 2d.

The above system is applicable to all classes and sizes of trades, and can be carried into effect on the premises of each concern (where there is sufficient space) to great advantage. It is for the master to arrange the system in accordance with his own particular business. In all cases it is necessary to engage a competent manager or foreman, who will fit up the work and generally supervise. He should be paid a regular weekly wage. Then there must be an operator, baster, presser, and several female finishers or helpers. The number of persons needed and their qualifications are regulated by the size and quality of the business. For instance, in a business doing up to thirty garments per week an operator should not be necessary unless he could fill up his spare time as a tailor or under-presser.

Up to twenty coats per week a presser is not required for similar reasons. Efforts should always be made to keep at least one apprentice. This system has the advantage of elasticity, inasmuch as one can increase and reduce their staff without forfeiting any of its advantages. Retention of character and individuality, and also uniformity of style and workmanship are assured. Busheling can also be reduced to a minimum.

For example : A firm sending out twelve coats per week, paying 12 dollars per garment, also employs two bushelmen at 42 dollars, making a total of 186 dollars for the week.

UNDER DIVISIONAL LABOUR.

" A " Foreman or manager will fit up, help baster, and press off ..	$35
Baster, will also press under ..	30
Tailor, will operate and generally help	28
Finisher, buttonhole, felling, etc. ..	20
2nd finisher, plain sewing	12
	$125

This team will have time to do its own busheling, thus leaving a balance of 61 dollars, which is a fair margin for all expenses.

I wish to point out how elastic this system is right here. In a twelve suits per week business the cutter might be able, if he is a practical man, to do the fitting up and supervising, thus leaving the foreman to help supervise and do most of the basting, leaving the baster in turn more time in which he may operate. Thus again leaving the tailor with little operating, and general helping to do, so that he can help the finisher. Thus proving that Finisher No. 2 is not required, and 12 dollars is saved ; or if the cutter, foreman and baster are quick men and work well together, they may substitute a first-class finisher at 20 dollars for Finisher No. 2, and dispense with the tailor's services, thus saving 20 dollars. Or a third method would be to keep the original team intact, and whenever there is an opening to make up a few stock coats, or make some of the vests.

EXAMPLE 2.

" B " Firm sends out thirty coats per week at 12 dollars, equals 360 dollars.

UNDER DIVISIONAL LABOUR.

" B " Foreman or manager will fit up, shape cut holes, etc. ..	$40
First baster will baste up and out, cover collars, baste in sleeves ..	30
Second baster's helper will do above except collars and sleeves ..	28
Third helper will operate all coats and fill up time sewing or under pressing	30
Presser will do all necessary pressing	30
Two finishers will do all felling, buttonholes, etc.	40
Two finishers' apprentices for padding and buttons, etc.	24
	$222
	$360
Balance	$138

There is sufficient margin to allow for rent, gas, etc. You will notice that I have allowed fairly good wages. Where possible I believe in raising them, and specialising the individual's work.

Example 2 still shows the foreman with plenty of time to shape, etc., and the third helper operating and filling up time. I take this opportunity to point out that an experienced operator can operate at least fifty coats per week, and the foreman can fit up the same amount. You will also notice that I have not mentioned busheling here. I consider in such a shop busheling must be kept distinct, and it is up to the cutter and foreman to place responsibility and charge to which branch is at fault. For instance, side-seams should be notched in three places, and sleeves cut to fit the armholes and pitches, notched back and front so that the baster has no trouble, and the work can go smoothly. Length of collar and forearm-seams can also be given after try-on.

This shop lends itself easily to reductions and additions of staff, according to the fluctuation of trade, without affecting its quality, character and quick despatch.

When the number of orders reaches fifty per week, and there are reasonable prospects of increase, it is time to engage a special operator and make various other changes. Our workshop then becomes the nucleus of that which can be transformed into a large sectional shop. Or it may be developed into distinct units of divisional labour, working independently on different classes of garments supervised by the same foreman, operated by the same operator, pressed by the same presser, and yet retaining that individual character which is the life and soul of high-class trade.

I will try to draw a comparison between divisional labour " Team System " and sectional labour, as it affects the high-class trade.

Sectional labour is divisional labour subdivided. It is cut into so many parts that each operation is just a cog in the wheel, and the garment must go through all the cogs before completion ; each sectional worker being ignorant of the others' functions ; the most that can be expected is a mechanical flatness and uniformity, but the individuality must be effected in the busheling department. Another drawback is this ; rush orders are almost impossible of execution because so many hands must handle one garment, and the routine must be maintained.

DIVISIONAL LABOUR.

TEAM SYSTEM.

Under this plan your foreman, operator and presser feeds three or four teams in the same shop. Overcoat team, sac coat and skirt coats, any of which can be merged into the other in the quiet time, or increased in the busy season. You get the advantage of being able to tackle rush orders by having five or six persons on one garment all working in unison under the foreman's eye, thus maintaining the individuality and character of each garment.

I will only add that I have worked this system successfully for many years.

A MODERNISED SYSTEM OF WORKING.

We are faced by great difficulties and problems in the production of bespoke tailoring which call for a solution. The conditions under which we work require a thorough readjustment based upon the latest scientific principles and up-to-date methods. We are in the midst of a transitional period, and it is the hope of all those who have the welfare of the trade at heart that it will lead to the ultimate re-establishment of the prestige of the tailoring trade.

The causes which have led to the present unsatisfactory state of bespoke tailoring are too well known to require a re-statement. Like the poor, " they are always with us " ; or, to be more exact, these problems have been with us through the greater part of the past century. On first becoming aware of their presence we were inclined to minimise their importance. Like the little clouds on the horizon they began to arise, at first hardly perceptible ; but year by year they have increased and assumed greater proportions, until to-day they are a real menace to the trade. How to deal with these pressing problems has become the all-absorbing topic amongst the members of our ancient craft.

All problems have a possible solution, and the greatest problems sometimes are the easiest solved. It is up to every one of us to ask ourselves the question : Are we going to assist in solving our trade problems, or are we content to let things slide into a state of chaos, the ultimate consequences of which not one of us can foresee ?

The evolution of time calls for a continuous readjustment of our methods to meet new conditions, because the constant influx into the market of new inventions is ever creating new conditions. The nineteenth century was an epoch of inventive genius, and, as the result, machinery of all kinds was placed on the market, introducing a great saving of time and labour, and creating a revolution in our methods of production.

The introduction of the sewing machine effected a great change in the tailoring industry. To-day, as the result, we have the ready-to wear garments manufactured in the wholesale factories. These garments are becoming very popular amongst the working classes, and the demand for them is on the increase, to the great consternation of bespoke tailors. The demand for these garments will continue to increase unless bespoke tailors alter their methods to meet modern conditions, so that they may compete on a more equal footing with the factories for the patronage of the middle and the working classes.

What are the features in the manufacture and appearance, etc., of the ready-made garment that make it so acceptable to the public ? The object in conducting this enquiry is that by a method of analogy we may arrive at a satisfactory way of popularising bespoke tailoring and regaining our lost prestige. First and foremost there is the price, which appears so low in many cases as almost to border on the ridiculous when compared with the charges made by bespoke tailors. We live in an age when the public are inclined to buy in the cheapest market, hence the demand for ready-made clothing. If any further argument were required to persuade the public to buy we might say that these garments, when new, possess all the features of cleanness, shape and fashion. What does it matter that the garments are inferior in quality and only last about six or nine months ? A small outlay will procure another new suit.

Another advantage to the public is that the waiting period is done away with. The customer who suddenly discovers at the last moment before leaving for his holidays that he requires a new suit, has simply to walk into the shop and purchase. The suit is waiting for the customer, and not the customer for the suit.

The popularity of the bespoke garment is decreasing. Why ? Some of the reasons are obvious. The past few years has seen a marked deterioration in workmanship. That superb workmanship which made the finished garment a thing of beauty and a joy to behold, and bearing the indelible marks of the master craftsman, which was a recommendation in itself, is becoming more and more rare. Our cutters are becoming more scientific and accurate than ever they have been ; but the difficulty is not with the cutting, but the making of the garments. We have a larger proportion of inefficient than efficient workmen. While a workshop might possess one or two really capable workmen who take a pride and interest in their work, and are able to impart those deft and artistic touches which make all the difference between a well tailored and an indifferently made garment, there are usually half-a-dozen or more workmen in the same shop who are quite indifferent as to the excellence of their work, and are therefore quite unable to make a garment in a satisfactory manner. With them it is just a matter of putting the pieces together without life, shape or form. The inefficient workman is then paid the same price for making his job as the skilled and efficient workman.

Is it to be wondered at that business in bespoke trades is on the decline, and that our customers are steadily decreasing ? The customer who decides to have his new suit made to measure might be fortunate in having that suit made by skilled workmen ; but, on the other hand, he might be decidedly unfortunate in having it put together by the unskilled workman. Fortunate or unfortunate, however, he will be asked to pay the usual price for the suit.

OUTWORKING.

The system of outworking has grown to an enormous and alarming extent during recent years. Have we really reached such a state that we are unable to accommodate our workers, or it is for the sake of cheapness, which at the same time leaves the master tailor free of responsibility for employing cheap labour ? Whatever the pros and cons of this question might be it is certain that the system has been exploited to such an extent that the public have lost confidence in bespoke tailors.

In connection with the wholesale factory made garments there is no question of sweated labour or unhealthy conditions. It is well known to the public that the hours of labour are moderate ; that machinery and other helpful appliances are used to lighten and ease their toil ; and that special attention is given to the health of the workpeople in providing proper ventilation, light, temperature, and sanitary arrangements.

To regain the confidence of the public we must abolish the system of outworking. A more unsatisfactory system in any trade is beyond conception. Let steps be taken to compel the master-tailor to provide his own workshop, on, or as near as possible to, the premises of his shop. In this way only can we fix the responsibility on the right shoulders. Let the accommodation of these workshops be adequate to the needs of the workers, due consideration being given to proper ventilation, light and sanitary arrangements.

Tailoring is not such a healthy occupation that we can with impunity ignore these questions. The workers must be educated to be cleanly in their habits. Proper rules and regulations should be posted in large type in every workshop, and the employees should make certain that these rules are observed and obeyed.

Next we must reorganise our methods of working. The present shortage of skilled workmen necessitates a new system. We must make the best use of the men that we have. Are we too conservative in our notions to take " tips " from the wholesale factories and organise our workshops after their plan with the division of labour system ? The present system of working individually, whether piece or day-work, is unsatisfactory and unfair to the workers, the master and the customers. We must work collectively, and the best workmen should be paid the highest wages, and

placed in charge of the workroom, the others placed and paid according to their separate abilities. This in itself would be an incentive, and act as a decided stimulus to workmen, as it would encourage them to improve their abilities to such an extent that they might ultimately reach the best-paid positions as managers of workrooms.

The manager would be held responsible for the making of each garment, and the latter should be made to conform to his individual ideas, artistic taste and judgment. He would place each worker, and cause them to work upon those parts of a garment for which he considered them most suitable, and he would educate them to respond to his mind and will. To put it briefly, he would be the brains of the workshop ; the others would be his hands.

The adoption of this system means the extensive use of the sewing machine. We must utilise the sewing machine to its fullest posibilities. Why not ? Taking the public as a whole they are not prepared to pay for hand-work ; nor do they wish for or appreciate hand-work. If, then, they do not demand, and are not prepared to pay for it, why give them hand-work ? Surely it is waste of energy. It could be left to the few exclusive shops in the West End to cater for the requirements of those who are willing to pay for hand labour.

The sewing machine is now regarded as indispensable in every workshop. Even in the best workshops it is used. Experience has taught us how to so manipulate the sewing of a seam by machine that it is almost as good as hand-work. In the hands of an experienced machinist the possibilities are even greater, and surprising results can be obtained in the putting in of pockets, linings, sleeves, and the putting on of collars that would fill the majority of old-fashioned tailors with wonder and amazement. The prejudice against the bagged coat is only held by those who have never seen the high-class coat made by these methods. They have only seen what is known as slop work in the lowest class of trades, and have not sufficient imagination to understand what the finished appearance of such a garment would be like when the system is in the hands of the higher grade of tailors and tailoresses.

What are the requirements of such a workshop ? In the first place there must be intelligent workmen who understand the making and the manipulation of garments thoroughly. There must be the machinists (male or female), the basters and the pressers who infuse shape and form into the garments as they pass through the various stages to completion. It must be well borne in mind, however, that the success or failure of a sub-divisional workshop depends primarily on the first man. He must not only be a master craftsman, but a capable manager.

For the purpose of training efficient managers, and for instructing them in the art of making garments by machine on the latest subdivisional methods, it would be beneficial to the trade if The John Williamson Co., Ltd., who have already rendered yeoman service in teaching practical tailoring, and the art and science of cutting, could see their way to add a new department to their Academy for the instruction of the uninitiated in subdivisional tailoring. A diploma could be given at the end of a successful course, which would be regarded as the hall-mark of efficiency, as the cutter's diploma is already regarded by the trade to-day.

The greatest difficulty in starting a subdivisional workshop is to obtain the right man to organise and manage the workshop. To obtain knowledge from books is a very tedious business, Knowledge from practical instruction is easy, and more quickly acquired.

If there were such a school, masters would have no difficulty. The best workmen could be singled out and sent on a course. He would return and reorganise the workshop after the methods taught.

The advantages of such a system are obvious. The old Log, which has been the bone of contention between masters and men, would pass out of existence. It would be forgotten, and there would be no mourners. The masters would be able to put their workers on weekly wages, on a par with other skilled industries. The employees would work regular and shorter hours, under healthier conditions.

Of late years the dearth of apprentices has caused great anxiety for the future of our trade. If we reorganised on the lines suggested should there be such a difficulty in obtaining apprentices for a profession that pays high and regular wages, and whose workers follow their calling under healthy conditions ? The apprentice could pass through one or all the stages of garment-making, according to his wishes and inborn ability to master the craft.

The management of the workshop would pass out of the hands of the hard-working cutter, who has quite enough worries without adding that of the workshop. Let us leave him free to concentrate upon his cutting and shop duties. He, of course, would still be the supreme authority, as his position demands, but he would deal with the manager of the workroom only. Under the old system of individualised labour the cutter must study closely the characteristics of each man in the manipulation and individualised methods of making a coat, and he must cut accordingly. We cannot get away from the fact that manipulation has a great effect upon the eventual fit of a finished garment, and we always have the two extremes of workmen, i.e., too much and too little manipulation. Under a correct subdivisional system the manipulation would be uniform in all garments. The manager would always be there with an eye on the workers. When I say that it would be uniform I do not wish it to be understood that a full chest would be worked up even if the customer were flat or hollow chested, but that proper instructions would be issued to the manager with each garment, and the garments would be worked according to instructions after a uniform method.

The output of work would multiply as the workers increased in efficiency, and we would then be able to grapple with the trade during the busy season. The customers would not be kept waiting, and disappointed every week, as was the case in some of the old trades. During the busy season the employees could work one or two hours a day extra, to be taken off during the slack season ; thus wages could be regulated all the year round, with fairness to masters and men, which would cement a mutual trust and understanding, so necessary for the prestige of our trade. It has been rightly urged by other writers that much could be done during the slack season by making stock garments ready for emergencies. That there would be always a good sale for raincoats, overcoats and flannels, I have no doubt ; many of our customers never discover that they require a new raincoat until a very wet day, then they want it at once ; likewise overcoats and flannels.

There is no reason why every tailor should not add a ready-made department to his business, all the garments being his own production during the slack season. In this way we would be dealing an effective blow at the wholesale factories. The advantages to the customer would be very good, as the garments could be left unfinished, and adjusted in a short time to the customers' requirements.

Before concluding, I will deal with the question of fixing a standard price for clothing. At the present time a master tailor can employ any kind of labour, and undersell all the other tailors in the district. Such competition is unfair, and detrimental to the prestige of the trade. Let the master tailors in every district meet together and fix a standard price list for clothes, governed by the cost of material, making, and a fair profit. For a certain price per yard of cloth there should be a corresponding price per suit ; to sell below that price should be an offence. It is obvious, however, that in some workshops where the percentage of good workmen is higher, the master tailor would

be able to command higher prices, and pay higher wages to his employees. This would be quite legitimate, as it is our great desire as tailors to keep the standard of workmanship as high as possible, and to prevent it from deteriorating to too low a level.

I will leave the other advantages of the modern system to the imagination of the readers. The possibilities are really very great and give promise of a successful future for the trade. The time has passed when the public will pay high tailors' charges. The demand is for value and cheapness. Let us, as far as fair and legitimate means at our disposal will allow, give them what they want. This is the art of salesmanship. The old system is gradually breaking down. It has been in existence a very long time. Again and again we have dealt with its problems, and patched up the weak places. To-day it will stand no further repairing or tampering with. The whole structure is beginning to tremble, and is in great danger of falling. The members of an ancient and honourable craft are beginning to forsake its shelter and seek other more staple industries, whilst other would-be younger members are afraid to come in, and are therefore lost to the trade.

We must pull down the structure of the old time-worn system, and build anew on attractive and up-to-date lines.

The old order of things is passing ; let us welcome the new.

MODERN METHODS OF TAILORING.

BY AN AMERICAN WRITER.

The question of labour in tailoring, always one of the vexing problems to the merchant tailor, has now become acute.

Just at the present time, when most of you are getting your work done after a fashion, and are having little trouble except for a scarcity of good men, you may look upon me as an alarmist, and my statements as extreme ; yet no man can be successful in business unless he is able to look ahead and prepare himself for future emergencies ; and every clear-thinking man in the trade will agree with me that the time when we must do something to solve the labour problem is not far off. The question that confronts us is : " Are we going to work out a construction plan for our workshops, or will we wait until our men force plans upon us, which we have nothing to do with making, and which certainly will not be to our advantage ? "

It is useless to try to escape facing the facts that the number of workmen in the trade is getting smaller instead of greater. The old journeyman tailor is passing away, either by death, or by going into some more attractive occupation ; and since the war immigration has totally ceased, certainly not to be resumed for some years. Where, then, are we to get our workmen ?

It is not necessary to take up your time to tell you of the drawbacks of the present system under which nine-tenths of our garments are produced. Most of you know all about them, many of you through experience. Irregular hours all night, work at times, yes, most of the time in the busy season ; idle during the day, and at the end of the year figure up the average wage. Gentlemen, a business that cannot pay a workman a living wage should close up shop. If the present system is hard on the men it works out none the less to the disadvantage of the employer.

When conditions like the present obtain, however, with workmen scarce and high-priced, no employer can make use of any talent for manufacturing efficiency he may possess without a complete change of system. We are fond of saying that the tailor is both a creator and manufacturer ; but it is a sad fact that few tailors have anything to do with manufacturing, and put the responsibility for their factory on the poorest paid and least regarded man in their employ—the journeyman tailor. If the business brains represented in the trade were to be devoted to managing the making of our garments, how long do you suppose the old slipshod methods of manufacturing would continue ? Within a year there would be a complete overturning of present methods if the merchant tailor personally directed his workroom, as other manufacturers do. In my case, when I realised that any further extension of our business was impossible under old methods, I did not sleep on the job, but began an investigation of our manufacturing. I put into practice every suggestion that seemed reasonable, but could find no way within reason to patch up the faults of the old system. I then became convinced that the solution lay in reconstructing the entire method of production from start to finish, finally evolving what I like to call

A SCIENTIFIC METHOD OF TAILORING.

Fitter : All canvases and linings are cut carefully as per direction of the house.

Marking Stitches : Girl.

Pocket Baster.

Pocket Maker and Operating centred in individuals has also a great advantage over the old system, as the operators get to be great artists in their particular lines.

Basting Haircloth and Padding : All canvases are made as per the cutter's specific directions on ticket. Likewise padding is used only in accordance with definite directions from the cutter, shown on orders O.W.N.W.R.W., also in case of padding shoulders, how much wadding, etc.

Padding Canvas : Girl.

Pressing Canvas and Collar : One trained to shape canvas according to the attitude of the man's figure and according to the directions on ticket.

Padding Collar : Girl.

Canvas Baster : The foreparts on the canvas are basted by men, who become so proficient that the cloth and canvas are uniformly applied, and the two parts correctly adjusted.

Padding Lapel : Girl.

Under Presser section takes care of a very important part of the garment. That is, pressing in the foreparts, pressing seams for all sorts of figures and attitudes as per directions on ticket and instructions of the house.

Shaping Coat and Collar section forms all collars and lapels in strict accordance with detailed patterns and not by guess-work.

Pressing Fronts for Tape.

Basting Tape.

Felling Tape : Girl.

Basting Seams section is guided solely by the notches, which, if misplaced, are immediately corrected on the pattern.

Operating section furnishes a check on the facings being properly made, and they must be O.K.'d by the foreman before the work is accepted by the operators.

Under Baster.

Edge Basters in turn check the operators.

Lining Basters then accept the garment when their foreman O.K.'s the edge basting. You will appreciate this avoids any dispute of bad tailoring, and places the responsibility directly.

Basting Shoulders are trained to work the shoulders according to directions and attitudes, which was a great bone of contention with me formerly.

Basting in Collar is worked scientifically, and not by guess-work. If collar does not fit it is given to a foreman, who refers it to the cutter to be adjusted, who, if necessary, perfects his pattern.

Pressing Bottom Collar and Tape : Pressing in the collar is done by a man who gets to be a trained artist, and avoids the bad-fitting collar caused by pressing collar long, if otherwise desired cutter gives directions.

Basting in Sleeves : The men become experts in working the armhole and basting sleeves to such perfection that if any great trouble is experienced in fitting sleeves they know that it is necessary for the cutter to adjust it, and usually a rectified pattern is the result.

Sewing in Sleeve by Hand.

Pressing Armholes.

Basting Armholes.

Basting Top Collar.

Felling Coat and French Felling Collar : Girl.

Basting Pulling ; Girl.

Pressing : With proper tools and the ever-hot iron, up-to-date pressers have the advantage of perfecting themselves in the proper shaping and working of garments by applying themselves solely to this work.

Button Sewers : Girl.

Examining : Sleeve making section. Sleeve making is a simple matter, yet my makers become articles in little details, such as the making of various cuffs, service braid, etc.

R-cutting sleeves : cutting sleeve lining.

Cuffs.

Basting in lining and tacking vents.

Basting seams and pressing sleeves.

Extras : Lapped seams, pleats, etc.

Silk Facing Basting section helps out in every section, not only put on braid, silk collars, silk facings, but serve as a general utility section composed of able practical tailors capable of detecting the slightest errors in the details of manufacture.

Scientific Tailoring treats with a division of effort by dividing men into groups, working out the various features in which they are most proficient, thereby producing a perfect garment in its entirety in the shortest possible time. It gives the unimportant work to the less skilful, leaving the finished workmen more time for the more important operation. It is made possible only by the fact that the individual is working upon that part of the garment of which he has a knack of handling and not wasting his and his employer's time trying to work that part of the garment which has always been a puzzle to him. By constant work upon a single feature he soon becomes master, earning a greater amount of money than was possible under the old system, working regular hours with no necessity for night work. This unquestionably creates a better mental condition, and a decided improvement physically.

This system has now been in operation nearly eight years, and I would not be such a strenuous advocate of its merits if it had not saved us time and money, as well as raising the quality of our output, at the same time making the working conditions of our men better, and raising their annual wages. In the eight years since we installed our workroom under the new system, many tailors have inspected it, and had its operation explained to them. A few of them have been favourably impressed, and have used it as a basis to put in systems of their own ; but the great majority have made one or more objections which were sufficient in their own minds to damn the whole project, without reflecting that conditions are different in each trade, and that the same study as given to the original plan would produce modifications which would adapt it to any business, large or small. "The proof of the pudding is in the eating."

"The time seems to have come when a change is imminent, and it merits our best thought. The men who can steer us out of the old into the new way will merit the gratitude of the entire trade now, and in the future, and to be asked to serve on such a board would be an honour and a privilege to be prized by the best men in our ranks."

A LEADING LONDON BESPOKE BUSINESS.

A tailoring house that can turn out a suit to measure for 57s. 6d. in these days of 8 to 15 guinea suits, cannot be lightly ignored, or altogether overlooked, particularly when they invite customers to call and see how it is done.

Though not exactly coming under the category of a customer, recently we accepted the invitation of Messrs. Curzon Brothers, Limited, who claim to "Cover the World"—a tall order, whatever it may mean—and made the best of our way to 60 and 62, City Road, London, E.C.

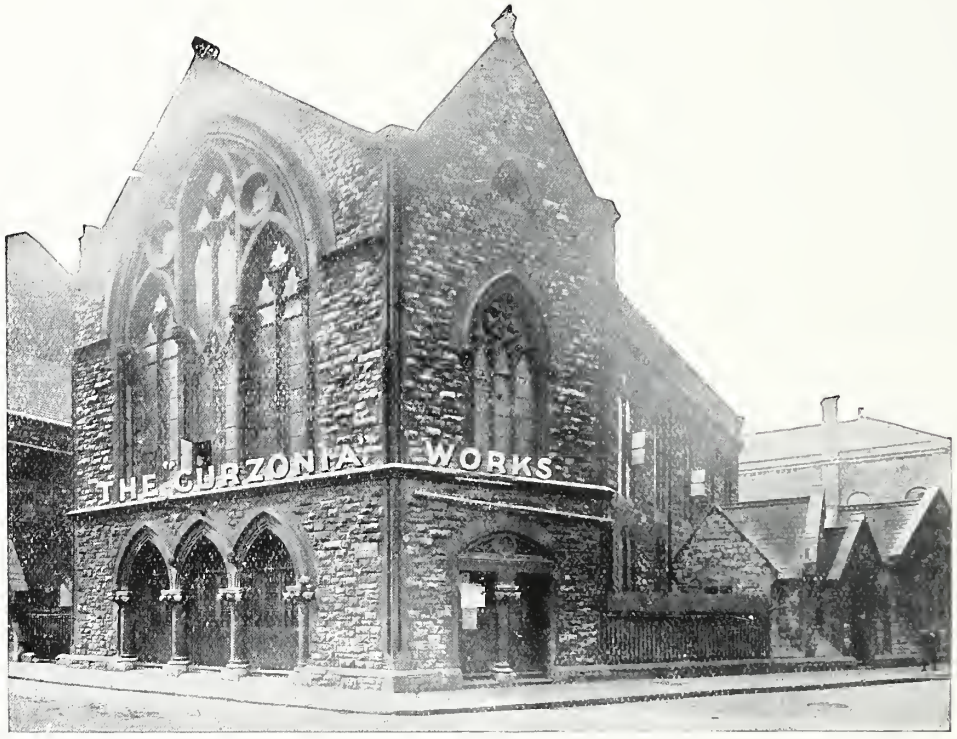
To the uninitiated it may be explained that Messrs. Curzon Brothers, Ltd., are the proprietors of thirty retail tailoring establishments located chiefly in and around London, in addition to which they to an extensive mail order business. Their business is solely in bespoke garments, and they claim to be "The World's Measure Tailors"—another enigmatic and impressive slogan.

The addresses given are the head offices and mail order departments, where all the multifarious commercial details of the concern are carried on, the workrooms or factories being situate elsewhere.

Having previously given an intimation of our visit, we were met on our arrival by the genial and courteous general manager, Mr. W. V. Saunders, who kindly proffered to act as our cicerone and interpreter in a tour round the firm's three factories.

A glance around the counting-house and offices where the incessant click, click of the typewriters filled the air, and passing through an adjoining room where a number of men were busily engaged folding and packing garments, thence skirting a stock-room, with shelves stacked with woollens of all descriptions, we emerged into the street.

A walk across the road, and a few yards along a street opposite, and we were outside the firm's new factory in Leonard Street, recently opened. This building has interesting historical and religious associations, for it was formerly a place of worship known as Whitefield's Tabernacle, and both Whitefield and Wesley preached there. The original building was erected in 1752, and was reconstructed in 1868. According to Mr. Walker Thornbury, in his work, "Old and New London," "this Chapel was the cradle of Methodism." A photographic reproduction of the exterior of same is given herewith.



LEONARD STREET WORKS (FORMERLY WHITEFIELD'S TABERNACLE).

The interior presented a busy hive of industry, for some two hundred persons of both sexes were engaged upon the making of coats. Here the system of organisation has been reduced almost to a fine art, and subdivision methods of production are seen in excelsis. The different workpeople are so arranged and disposed that the garment in the course of making passes from hand to hand without anyone leaving his or her place.

For example, when the garments are brought in from the cutter the fitter-up takes them; his particular work done, he

COAT ROOM—LEONARD STREET WORKS.

ANOTHER SECTION—LEONARD STREET WORKS.

hands them over to the baster close at hand; she does likewise to the machinist; ditto the under-presser; ditto the feller and buttonholer; thence to the presser-off; and, finally, to the buttoner. There is no noise or confusion, and no waste of time, and the system works with clock-like precision.

The pressers and machinists are of both sexes, and the high-pressure system of gas irons is used, which ensures a regular and even temperature of heat throughout the whole day, and the abolition of the old-fashioned tailor's stove.

At the Banner Street works, something rather more than a stone's throw from Playhouse Yard, all the cutting is done, and here, in a light, airy room, fully fifty cutters ply their daily task. Each garment is cut separately, and some 3,600 garments pass through the cutters' hands each week. Although competent to cut by system, we were informed by the head-cutter well-tested and balanced block patterns are used by the cutters, the necessary deviations being made on the cloth.

Trimming, stock and workrooms were each visited in turn, all alike well equipped and adapted for the efficient and expeditious turning out of garments.

Another important feature prominent at each of the three factories, is the admirable "Welfare" work carried on in the interests of the employees. At every one of the works a dining-room has been fitted up with tables and seats, so that meals may be partaken of without leaving the building. A kitchen, with gas stoves and cooking utensils, has been installed, and two cooks are employed at each factory at the firm's expense, to cook and prepare whatever food the employees choose to bring. This act of thoughtfulness on the part of the directors is greatly appreciated and is largely taken advantage of by the workers, and in order to complete the good work, we understood a piano was about to be introduced.

Our tour having ended, we returned to the head office in City Road to glean further information as to the working of so successful a business.

In furtherance of this object we were straightway introduced to Mr. Marcus Cohen, the energetic and business-like managing director of the company, who kindly volunteered to answer any question we cared to submit.

FINISHING ROOM—PLAYHOUSE YARD WORKS.

A ten minutes' walk, and the Playhouse Yard, Golden Lane works, were entered.

Here the trousers and vests are made, each having separate and distinct departments. The same system of working is carried out here as in the coat section, and the output of vests varies from one thousand to three thousand per week, according to the time of year.

In this department, as in all the others, a number of male tailors are employed "on the board," as seen in the accompanying illustration.

In the course of an interesting chat we gathered that there are three hundred employees engaged in the making-up departments of the firm, and their hours of labour are forty-eight per week. Many of these are engaged on piecework, and in response to an enquiry as to the wages earned by the employees, the wages sheets were brought for our inspection, and we may say, without any qualification, we were astounded at the large sums many of the men are earning week by week. Many

master tailors we know would consider themselves very fortunate to be drawing such amounts.

The secret of the success of this firm is not cheap labour, nor bad conditions generally, but exactly the reverse. Scientific management and organisation, and the generous treatment of employees, are the foundation stones upon which the flourishing business has been erected.

The principals themselves watch everything very closely, and although a large business, they give close personal attention to all the details.

"We do not pose as philanthropists," said Mr. Cohen, "and we regard our welfare work as an investment, and not as expenditure. A trip to Brighton in the summer, and social gatherings in the winter to all the members of our staff, and free of any cost to them, make for contented, happy employees and better work. As a matter of fact, we always have a waiting list of workers applying for situations in our works."

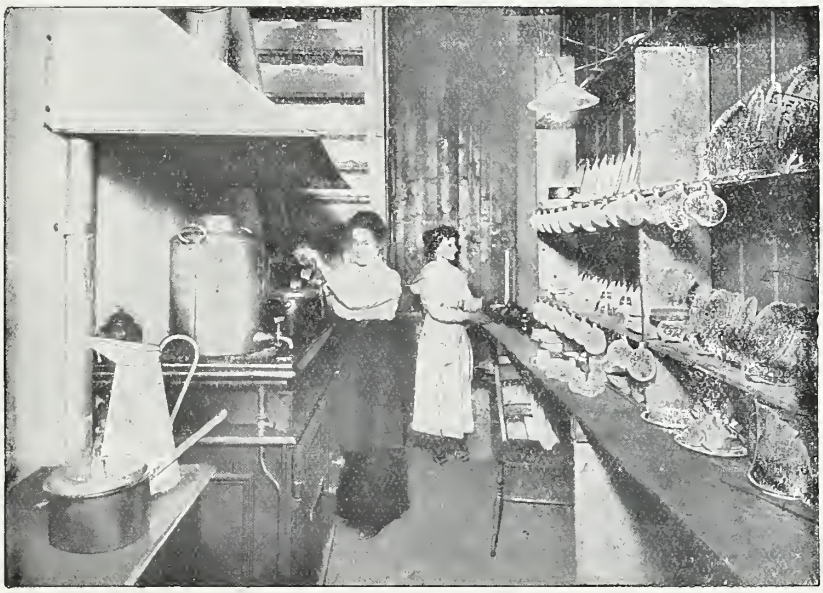
The managers of the retail shops are paid on salary and commission, and earn quite good remuneration. As they are liberally treated, they, in turn, have an additional incentive to do the best they can for their employers.

Messrs. Curzon Brothers' trade is confined strictly to the bespoke, but Mr. Cohen explained: "We are not out to crush the small master tailor, and indeed we have not robbed him of a single customer. We have created a clientele of our own. The vast majority of our customers were not formerly patrons of the bespoke tailor, but of the ready-made clothier. This class of customer, hitherto contented with ready-made garments, has been educated by us to desire made-to-measure wearing apparel, which we supply at ready-to-wear prices."

Not wishing to encroach further upon the valuable time of so busy a gentleman, we brought the interview to a close at this point.

The tour had proved very interesting and informative, and every facility had been granted us so that we might obtain definite facts and figures. Both the managing director and the general manager had answered all questions with a freedom and frankness which showed that, in the conduct of their business, they had nothing to hide and nothing of which to be ashamed.

Cheap clothes need not necessarily be "nasty"; at any rate, that is the conclusion we arrived at after our survey of Messrs. Curzon Brothers' well-adapted and well-managed workrooms.



COOKING KITCHEN.

DINING ROOM.

FINALE.

The word "Finis" must now be put to this book, despite the temptation to add still further to its many pages.

The subject, however, has by no means been exhausted, as the possibilities of the sewing machine are well nigh inexhaustible, but there is a limit to an editor's equanimity, a publisher's patience, not to speak of the forbearance of long-suffering readers.

Reluctantly, therefore, the pen must be laid aside, in the hope that through the study of the foregoing pages, not a few members of the craft may have been aided in their daily toil, and given new ideas as to the working of the sewing machine.

This is the purpose of the book, the accomplishment of which will well repay the various contributors for any efforts put forth in undertaking a pleasing and agreeable task.

(THE END.)

THE JOHN WILLIAMSON CO., LTD.,
42, GERRARD STREET, LONDON, W.1.